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Western Mining in the Twentieth Century Oral History Series

Simon David Strauss

MARKET ANALYST FOR NON-FERROUS METALS AND NON-METALLIC MINERALS, JOURNALIST, MINING CORPORATION EXECUTIVE, 1927-1994

With an Introduction by
Charles F. Barber

Interviews Conducted by
Eleanor Swent
in 1994

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Since 1954 the Regional Oral History Office has been interviewing leading participants in or well-placed witnesses to major events in the development of Northern California, the West, and the Nation. Oral history is a modern research technique involving an interviewee and an informed interviewer in spontaneous conversation. The taped record is transcribed, lightly edited for continuity and clarity, and reviewed by the interviewee. The resulting manuscript is typed in final form, indexed, bound with photographs and illustrative materials, and placed in The Bancroft Library at the University of California, Berkeley, and other research collections for scholarly use. Because it is primary material, oral history is not intended to present the final, verified, or complete narrative of events. It is a spoken account, offered by the interviewee in response to questioning, and as such it is reflective, partisan, deeply involved, and irreplaceable.

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Cataloging information

STRAUSS, Simon David (b. 1911) Metals market analyst

Market Analyst for Non-ferrous Metals and Non-metallic Minerals, Journalist, Mining Corporation Executive, 1927-1994, 1995, xv, 387 pp.

Childhood in Peru, schooling in Chile, New York City; journalist: 1927-1932, metals market reporter, assistant editor, Engineering and Mining Journal; 1932-1934, editor, Madison, NJ, Eagle, Prohibition, the mob, Morro Castle fire; 1935-1941, mining securities analyst, Standard Statistics Co.; WWII: vice president, Metals Reserve Co. (Reconstruction Finance Corp.), procurement of strategic minerals, incompatibility of Henry Wallace and Jesse Jones, Combined Raw Materials Board, Premium Price Plan and committee, U.S. Commercial Corp., black markets, new field of mineral economics; 1946-1988, American Smelting & Refining Co. (ASARCO), vice president, director, vice chairman: marketing non-ferrous metals and non-metallic minerals internationally, forming Southern Peru Copper Corp., maintaining LIFO inventory, Mt. Isa Mine, 1967-68 copper miners strike, Pennzoil takeover attempt; from 1989, director, Magma Copper Corp.; discussion of: American Mining Congress, 1951 Paley Commission report, nationalist movements, price stabilization efforts, trade associations, commodity cartels, environmentalism; wife Elaine Mandel Strauss and polio, Albert Gore, Sr.'s germanium mine, friend Mauricio Hochschild.

Introduction by Charles F. Barber, Chairman (retired), ASARCO.

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PREFACE

The oral history series on Western Mining in the Twentieth Century documents the lives of leaders in mining, metallurgy, geology, education in the earth and materials sciences, mining law, and the pertinent government bodies. The field includes metal, non-metal, and industrial minerals, but not petroleum.

Mining has changed greatly in this century: in the technology and technical education; in the organization of corporations; in the perception of the national strategic importance of minerals; in the labor movement; and in consideration of health and environmental effects of mining.

The idea of an oral history series to document these developments in twentieth century mining had been on the drawing board of the Regional Oral History Office for more than twenty years. The project finally got underway on January 25, 1986, when Mrs. Willa Baum, Mr. and Mrs. Philip Bradley, Professor and Mrs. Douglas Fuerstenau, Mr. and Mrs. Clifford Heimbucher, Mrs. Donald McLaughlin, and Mr. and Mrs. Langan Swent met at the Swent home to plan the project, and Professor Fuerstenau agreed to serve as Principal Investigator.

An advisory committee was selected which included representatives from the materials science and mineral engineering faculty and a professor of history of science at the University of California at Berkeley; a professor emeritus of history from the California Institute of Technology; and executives of mining companies.

We note with much regret the death of three members of the original advisory committee, all of whom were very much interested in the project. Rodman Paul, Professor Emeritus of History, California Institute of Technology, sent a hand-written note of encouragement just a few weeks before his death from cancer. Charles Meyer, Professor Emeritus of Geology, University of California at Berkeley, was not only an advisor but was also on the list of people to be interviewed, because of the significance of his recognition of the importance of plate tectonics in the genesis of copper deposits. His death in 1987 ended both roles. Langan Swent delighted in referring to himself as "chief technical advisor" to the series. He abetted the project from its beginning, directly with his wise counsel and store of information, and indirectly by his patience as the oral histories took more and more of his wife's time and attention. He completed the review of his own oral history transcript when he was in the hospital just before his death in 1992.

Thanks are due to other members of the advisory committee who have helped in selecting interviewees, suggesting research topics, and raising funds.

Unfortunately, by the time the project was organized several of the original list of interviewees were no longer available and others were in failing health; therefore, arrangements for interviews were begun even without established funding.

The project was presented to the San Francisco section of the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME) on "Old-timers Night," March 10, 1986, when Philip Read Bradley, Jr., was the speaker. This section and the Southern California section provided initial funding and organizational sponsorship.

The Northern and Southern California sections of the Woman's Auxiliary to the AIME (WAAIME), the California Mining Association, and the Mining and Metallurgical Society of America (MMSA) were early supporters. Several alumni of the University of California College of Engineering donated in response to a letter from Professor James Evans, the chairman of the Department of Materials Science and Mineral Engineering. Other individual and corporate donors are listed in the volumes. The project is ongoing, and funds continue to be sought.

Some members of the AIME, WAAIME, and MMSA have been particularly helpful: Ray Beebe, Katherine Bradley, Henry Colen, Ward Downey, David Huggins, John Kiely, Noel Kirshenbaum, and Cole McFarland.

The first five interviewees were all born in 1904 or earlier. Horace Albright, mining lawyer and president of United States Potash Company, was ninety-six years old when interviewed. Although brief, this interview will add another dimension to the many publications about a man known primarily as a conservationist.

James Boyd was director of the industry division of the military government of Germany after World War II, director of the U.S. Bureau of Mines, dean of the Colorado School of Mines, vice president of Kennecott Copper Corporation, president of Copper Range, and executive director of the National Commission on Materials Policy. He had reviewed the transcript of his lengthy oral history just before his death in November, 1987. In 1990, he was inducted into the National Mining Hall of Fame, Leadville, Colorado.

Philip Bradley, Jr., mining engineer, was a member of the California Mining Board for thirty-two years, most of them as chairman. He also founded the parent organization of the California Mining Association, as well as the Western Governors Mining Advisory Council. His uncle, Frederick Worthen Bradley, who figures in the oral history, was in the

first group inducted into the National Mining Hall of Fame, Leadville, Colorado, in 1988.

Frank McQuiston, metallurgist, vice president of Newmont Mining Corporation, died before his oral history was complete; thirteen hours of taped interviews with him were supplemented by three hours with his friend and associate, Robert Shoemaker.

Gordon Oakeshott, geologist, was president of the National Association of Geology Teachers and chief of the California Division of Mines and Geology.

These oral histories establish the framework for the series; subsequent oral histories amplify the basic themes.

Future researchers will turn to these oral histories to learn how decisions were made which led to changes in mining engineering education, corporate structures, and technology, as well as public policy regarding minerals. In addition, the interviews stimulate the deposit, by interviewees and others, of a number of documents, photographs, memoirs, and other materials related to twentieth century mining in the West. This collection is being added to The Bancroft Library's extensive holdings.

The Regional Oral History Office is under the direction of Willa Baum, division head, and under the administrative direction of The Bancroft Library.

Interviews were conducted by Malca Chall and Eleanor Swent.

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Horace Albright, Mining Lawyer and Executive, U.S. Potash Company, U.S. Borax, 1933-1962, 1989

Samuel S. Arentz, Jr., Mining Engineer, Consultant, and Entrepreneur in Nevada and Utah, 1934-1992, 1993

James Boyd, Minerals and Critical Materials Management: Military and Government Administrator and Mining Executive, 1941-1987, 1988

Philip Read Bradley, Jr., A Mining Engineer in Alaska, Canada, the Western United States, Latin America, and Southeast Asia, 1988

Catherine C. Campbell, Ian and Catherine Campbell, Geologists: Teaching, Government Service, Editing, 1989

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Norman Cleaveland, Dredge Mining for Gold, Malaysian Tin, Diamonds, 1921-1966; Exposing the 1883 Murder of William Raymond Morley, 1995

James T. Curry, Sr., Metallurgist for Empire Star Mine and Newmont Exploration, 1932-1955; Plant Manager for Calaveras Cement Company, 1956-1975, 1990

J. Ward Downey, Mining and Construction Engineer, Industrial Management Consultant, 1936 to the 1990s, 1992

Hedley S. "Pete" Fowler, Mining Engineer in the Americas, India, and Africa, 1933-1983, 1992

James Mack Gerstley, Executive, U.S. Borax & Chemical Corporation; Trustee, Pomona College; Civic Leader, San Francisco Asian Art Museum, 1991

Robert M. Haldeman, Managing Copper Mines in Chile: Braden, CODELCO, Minerec, Pudahuel; Developing Controlled Bacterial Leaching of Copper from Sulfide Ores; 1941-1993, 1995

John F. Havard, Mining Engineer and Executive, 1935-1981, 1992

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Robert Kendall, Mining Borax, Shaft-Freezing in Potash Mines, U.S. Borax, Inc., 1954-1988, 1994

Plato Malozemoff, A Life in Mining: Siberia to Chairman of Newmont Mining Corporation, 1909-1985, 1990

James and Malcolm McPherson, Brothers in Mining, 1992

Frank Woods McQuiston, Jr., Metallurgist for Newmont Mining Corporation and U.S. Atomic Energy Commission, 1934-1982, 1989

Gordon B. Oakeshott, The California Division of Mines and Geology, 1948-1974, 1988

James H. Orr, An Entrepreneur in Mining in North and South America, 1930s to 1990s, 1995

Vincent D. Perry, A Half Century as Mining and Exploration Geologist with the Anaconda Company, 1991

Carl Randolph, Research Manager to President, U.S. Borax & Chemical Corporation, 1957-1986, 1992

John Reed, Pioneer in Applied Rock Mechanics, Braden Mine, Chile, 1944-1950; St.Joseph Lead Company, 1955-1960; Colorado School of Mines, 1960-1972, 1993

Joseph Rosenblatt, EIMCO, Pioneer in Underground Mining Machinery and Process Equipment, 1926-1963, 1992

Eugene David Smith, Working on the Twenty-Mule Team: Laborer to Vice President, U.S. Borax & Chemical Corporation, 1941-1989, 1993

Simon Strauss, Market Analyst for Non-ferrous Metals and Non-metallic Minerals, Journalist, Mining Corporation Executive, 1927-1994, 1995

Langan W. Swent, Working for Safety and Health in Underground Mines: San Luis and Homestake Mining Companies, 1946-1988, 1995

James V. Thompson, Mining and Metallurgical Engineer: the Philippine Islands; Dorr, Humphreys, Kaiser Engineers Companies; 1940-1990s, 1992

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Donald Dickey, Oriental Mine
Warren Fenzi, Phelps Dodge
Frank Joklik, Kennecott
Marian Lane, mine doctor's wife
John Livermore, geologist
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Richard M. Stewart
Simon D. Strauss
John R. Struthers
Virginia Bradley Sutherland, in memory of Helen R. Henshaw
James V. Thompson
John J. Trelawney
William I. Watson
Barbara A. Whitton in memory of William B. Whitton
William B. Whitton
Judy D. Woodward

INTRODUCTION--by Charles F. Barber

For more than fifty years, Simon D. Strauss has been the fountainhead of informed comment, the gifted analyst of the non-ferrous metals markets, and the valued friend of mining and metals people the world around.

Mining and metals are in Simon's blood. He was born in Lima, Peru. At the time, his father, Lester Strauss, a graduate of the School of Mines, Columbia University and a consulting mining engineer, had his office in Lima. I will never forget the day in 1977 when together we made our first visit to the renowned Inca ruins at Macchu Pichu. As we followed the path leading to the ruins, we come upon a placque recording the discovery of the ruins on July 24, 1911, by Hiram Bingham, the noted archeologist from Yale University. "My birthday!" Simon exclaimed, and he told how his father had worked with Dr. Bingham on the planning for the excavations which followed.

In his library Simon has a copy of Herbert and Lou Henry Hoover's translation of De Re Metallica by Georgius Agricola, the classic work on the art and science of mining first published in 1556. This translation from the Latin published in London in 1912 was a labor of love by the Hoovers begun in 1906, when Mr. Hoover, then a consulting mining engineer, had his office in London. The copy was personally endorsed by Herbert Hoover to his friend Lester Strauss, Simon's father. Herbert Hoover received the first gold medal awarded by the Mining and Metallurgical Society for "conspicuous public service for the advancement of the science of mining and metallurgy"; Simon Strauss became the 21st gold medalist of the Society in 1984.

In 1927, when Simon entered City College of New York, his objective was to become a journalist. Then Arthur W. Allen, a British engineer and family friend who had recently been appointed editor of the Engineering and Mining Journal, learned of the young man's ambition. "The best way to learn to write is to write," he advised, and he offered Simon a job. So it was that Simon began his career in mining and metals. Later, in 1935, he joined the Standard Statistics Company as a financial analyst covering the mining and coal industries.

In 1941, Simon went to Washington and served the government in the wartime agencies concerned with the availability, procurement, and allocation of metals and other materials in support of the war effort. In the final years of the war he served as a vice president and a director of the Metals Reserve Company and as a director of the Combined Raw Materials Board which was responsible for the allocation of available raw materials between the United States and the United Kingdom.

Following the war, in 1946, he joined Asarco, then known as American Smelting and Refining Company. I first met Simon in 1956, when I joined the company as general counsel. He was then vice president (sales) and a director of the company. I found a warm and generous man, always available and willing to help me find my way in the world of metals. It soon became apparent to me that he knew and had at his fingertips the relevant current information about metals, their sources, means of production, prices and markets, and the history of and relationships among the people, companies, and nations involved. I soon appreciated his stature in the industry. Journalists sought his comments on markets and industry concerns. Leaders in the industry made it a point to seek him out at meetings in the United States and abroad and to meet with him when they were in New York. I admired the extent to which he was called upon to present his views in speeches, in testimony before congressional committees and in meetings with government officials concerned with the availability of minerals and metals and related national security matters. An incident in the early 1960s is illustrative. It became apparent that the value of the silver contained in U.S. coins would soon exceed the monetary value of the wartime nickels, and the dimes, quarters, half dollars and silver dollars then in circulation. The government then faced, in an urgent context, the necessity of replacing the U.S. silver coinage. One Saturday morning, the responsible House committee held a hearing in New York City and invited Mr. Strauss to testify. Their questions ranged over all aspects of this daunting problem. When the committee excused Simon, the members all stood and applauded--a tribute, the spirit of which was evident time and again over the course of his career.

Simon Strauss had a splendid career with Asarco. All the while, he served the U.S. government on numerous advisory boards and as a lecturer on minerals policy at the Army War College. He served the metals industry in leadership positions in national and international associations concerned with research and the development of markets for copper, lead, zinc and silver. He has been honored as few before him for his contributions in the field. Following retirement from Asarco, Mr. Strauss conducted courses on minerals policy at Columbia University, MIT, the University of California at Berkeley, Penn State, the University of Arizona, and the Polytechnic Institute of New York.

Then in Trouble in the Third Kingdom, a book published in 1986 by Mining Journal Books of London, he presented his views "based on almost sixty years of following the markets for minerals under widely different circumstances." Always generous, he added in the acknowledgements that the book "reflects experiences shared with others, knowledge absorbed from others and opinions influenced by others."

I have written about his career, but there is much more in my heart. Simon Strauss is one of those warm and very special people, sensitive

knowledgeable, and compassionate who, with his kitbag of stories and interest in people, brings joy to the lives of his friends and acquaintances. My wife and I recall the gracious hospitality he and his wife Elaine extended so frequently to international visitors--even though Elaine was confined to a wheelchair as a consequence of a severe attack of infantile paralysis in 1945. We remember too the loving support he gave Elaine to the end of her days and the joy he felt as she shared her life experience in order to encourage others who were physically impaired. This she did on regular visits with patients of the Burke Rehabilitation Hospital in White Plains, New York, and through her book In My Heart I'm Still Dancing. We now rejoice to see the happiness he has experienced with his second wife, Janet, a family friend since both were young. They have travelled to Alaska, Peru, and Chile; London, Hamburg, and South Africa; and to Papua New Guinea and Australia responding to invitations to speak and share his experience and current insights on the world of minerals and metals.

I think of Simon D. Strauss as the generous and thoughtful person who has enriched the lives of the many throughout the world who have been touched by his presence. I commend his reminiscences to the reader.

Charles F. Barber
Chairman, ASARCO Incorporated (1971-1982)

April 1995
Greenwich, Conneticut

INTERVIEW HISTORY--by Eleanor Swent

Simon D. Strauss was one of the first recommended interviewees for the Western Mining in the Twentieth Century Oral History Series. Although not a mining engineer, he has had a pervading influence on the industry because of his writing, speaking, and analysis of the metals markets and industry. He is the only non-technical member of the elite group who have been named Copper Man of the Year. He has also received the gold medal of the Mining and Metallurgical Society of America. His career has spanned the universe of the mineral industry not only geographically but intellectually.

Our first conversation regarding the oral history series took place in 1986 when Strauss was a guest lecturer at the University of California and visited his good friend James Boyd in Carmel during the period when Boyd was being interviewed. (Strauss later wrote the introduction for the Boyd oral history.) From then on, the challenge was to find an appropriate time and place for this extremely busy man to sit down with me and a tape recorder. His homes are in the East and his trips to the West Coast were brief. Then in June, 1994, we both attended the Mining History International Conference in Golden, Colorado, where he presented a paper, "Graphite, Mica, and the Blockade of Madagascar During World War II," which is included in the appendix to this volume. His wife Janet invited me to interview him at their summer home in Lenox, Massachusetts, for a week in August.

Before I interviewed him, Simon wanted me to read his first wife Elaine's book, In My Heart I'm Still Dancing, which tells of her courageous life as a polio survivor. It is poignant and inspiring, written to encourage other disabled people and recalling a time when polio was feared and access to public places was denied to the disabled. It also attests to Simon's loyalty and adaptability. His own book, Trouble in the Third Kingdom, published in 1986 by Mining Journal Books of London, is one I have frequently turned to as a reference; it is a clear and comprehensive study of the minerals industry in this century. I read it again in preparation for his interview.

Simon met me at the Hartford airport and we drove to their simple one-story house, nestling in pretty flower beds planted by Janet, with a lawn extending to the shore of the lake called Stockbridge Bowl. The wall motto which greets guests, and which they use as a table grace before dinner, sets the tone of their hospitality: "The place to be happy is here; the time to be happy is now; the way to be happy is to make others happy." Neighbors of forty years come in and out like members of the family.

It was an idyllic setting for exploring a career which began in Peru and Chile where Strauss's father was a noted mining engineer. In New York City he finished school and briefly attended university before becoming a journalist and editor with the Engineering and Mining Journal. He then edited a small-town newspaper, and later was a metals market analyst for the predecessor of Standard & Poor's. He served in World War II with the Reconstruction Finance Corporation in Washington as vice president of Metals Reserve Company, assuring supplies of critical metals. At the end of the war, he began his long association with American Smelting and Refining Company, now ASARCO, beginning in the sales division and becoming vice chairman of the board. At present, he still serves on the board of Magma Copper Corporation as well as doing consulting work.

Simon Strauss has a brilliant mind, melodious voice, and great personal charm, all of which have contributed to his success as an advisor to corporations, universities, and governments. He can grasp the complexities of world metals markets and interpret them to others in vivid and understandable terms. In his oral history he tells of using his brown tweed suit, bought on sale, to illustrate a lecture on silver pricing and inflation. In a difficult court case, he demonstrated the concept of scrap metal by explaining what happens to the hole when doughnuts are made.

Strauss spoke from minimal notes, with his topics well organized so the interview progressed smoothly for five days, August 23 through 27, 1994. There were interludes to visit some of the famed "cottages" of the area, to attend concerts at Tanglewood, and to relax with friends. When the transcript was sent to him, he made very few changes, correcting some spelling and punctuation and clarifying a phrase here and there. As befits a professional editor, changes were clearly indicated and the transcript was promptly returned. This oral history will be valued by researchers in economic and business history as well as in the history of mining.

Charles Barber, retired chairman of ASARCO, wrote the introduction to his friend and colleague.

The sixteen tapes of the interview are available at The Bancroft Library for study.

Eleanor Swent,
Interviewer\Editor

July 1995
Regional Oral History Office
The Bancroft Library
University of California, Berkeley

Regional Oral History Office
Room 486 The Bancroft Library

University of California
Berkeley, California 94720

BIOGRAPHICAL INFORMATION

(Please write clearly. Use black ink.)

Your full name SIMON DAVID STRRUSS

Date of birth July 24, 1911 Birthplace Lima, Peru

Father's full name LESTER WALLACK STRAUSS

Occupation Mining Engineer Birthplace New York, NY, USA

Mother's full name BERTHA MILLER

Occupation Housewife Birthplace Plattsburgh, NY, USA

Your spouse JANET ANN McCLOSKEY; second spouse

Occupation Social worker; administrator Birthplace New York, NY, USA

Your children Peter Lester Strauss - lawyer, university professor

Susan Dee Strauss Ord - art therapist

Where did you grow up? Lima, Peru; Valparaiso, Chile; New York, NY, USA

Present community New Rochelle, NY, USA

Education Mackay School, Valparaiso, Chile; public schools, NY City; one year, College of City of New York

Occupation(s) Journalist; financial securities and commodity analyst; official of government war-time corporation; marketing executive with mining corporation; visiting lecturer at universities

Areas of expertise Economics of the mineral industries; in particular knowledge of markets for minerals and metals

Other interests or activities Author of books and articles dealing with mineral industry problems; classical music; golf; travel; reading - particularly history and biography; politics

Organizations in which you are active Trustees of Reservations (A Massachusetts conservancy); National Mining Hall of Fame and Museum; other mining professional organizations; Manhattan School of Music (former vice chairm

I CHILDHOOD IN PERU AND CHILE, 1911-1921

[Interview 1: August 23, 1994] ##[1]

Parents, Lester and Bertha Miller Strauss

Swent: Simon, let's begin by having you tell us where and when you were born.

Strauss: I was born in Lima, Peru, on the 24th of July, 1911. My father, Lester W. Strauss, was a mining engineer, graduate of Columbia, School of Mines, class of 1900. My mother, Bertha Miller Strauss, was a native of Plattsburgh, New York, who had met my father while he was a mining school student. They became engaged, but they did not actually get married until 1907. My father had gone to Peru in 1904 to work at the Morococha mine in the Peruvian Andes, and had promised to come back to New York to marry my mother, but his work kept him in Peru.

Finally, some time in 1906, the Peruvian Congress enacted legislation establishing the right to have civil ceremonies. Previously, all marriages performed in the Republic of Peru had to be performed by Catholic priests. My parents were both Jewish, so that was not an option for them.

Following the enactment of this legislation, my father sent my mother a cable, and she made the long trip from Plattsburgh to New York City, took a ship that went to the port of Colón on the northern side of the Isthmus of Panama, took the train across from Colón to Panama City, because the canal was not in existence yet. It was under construction. Sat in Panama City for a week, and finally caught a ship going down the West Coast from San Francisco by way of Panama to Callao, the port in Peru.

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[1]## This symbol indicates a tape or tape segment has begun or ended. A guide to the tapes follows the transcript.

My father met her on the 26th of March, and on the 27th of March, the two of them were married in a civil ceremony presided over by the mayor of the city of Lima, and with the presence of the American Consul. For a long time, I was under the impression that it was the first civil ceremony ever performed by the Republic of Peru, but subsequently I have learned that it was in fact number thirteen. I have a copy of my parents' wedding certificate, and it has the number thirteen on it.

I have an older sister, Ruth, who was born in May of 1910. Late that year, my mother decided to take the baby up to New York so that the grandparents could see this first grandchild either in the Strauss or Miller families. When she was in New York, she did not feel very well, and she consulted a doctor, who explained that her temporary malaise was the result of the fact that she was once again pregnant. Her mother and her mother-in-law both urged her to stay in New York until the baby was born, but Mother was determined to return to Peru to be with her husband. As a consequence, I had the rather unique experience of having traveled 10,000 miles before being born. [laughter]

Birth in Lima, Peru, and a Naming Decision

Strauss: I was born at home in Lima. My parents had discussed the question of selecting a name for the child in the event it was a boy. My father preferred the name of Simon, which was his father's name. His father was already dead. My mother thought that a more appropriate name would be David, which was her father's name, and her father also was already dead. The issue had not been resolved when I appeared on the scene. Actually, although Mother had returned to Peru to be with her husband when the baby arrived, her husband had an assignment to examine tin properties in Bolivia, and he was not on hand at the time of my actual birth.

When friends came to see my mother, they asked what the baby's name was going to be. My mother said his name would be David Simon Strauss. However, when it came to the filing of the birth certificate, my father was approached by the authorities, and he filled the papers out, "Simon David Strauss."

I've already indicated I had an older sister, Ruth. She was fourteen months old when I was born, and she was just beginning to speak. She was told that she had a baby brother. In her effort to say "baby brother," she came up with sounds which eventually my mother decided were "bubby" or "buddy," and so I

became known as "Buddy." The truly peculiar thing about all this is that, although my father died in 1935, when I was twenty-four years old, and my mother died in 1949, when I was thirty-eight years old, not once in speaking to me do I ever recall having either of them call me either Simon or David. They always called me Buddy.

I have concluded from this that they were never willing really to face up to the issue as to what my name was, and were not prepared to have a controversy on the matter. So in family circles, I was always known as Buddy.

However, my mother was the person who first took me to school, and whether it was in South America or later in New York, inevitably she either registered my name as David S. Strauss or S. David Strauss.

Swent: She didn't want to give up the David!

Strauss: She did not want to give up the David. She never recognized the Simon.

My first employment was by a great friend of my father's, Arthur Allen, the editor of the *Engineering and Mining Journal*, so of course, I was Simon at McGraw-Hill when I went to work there. This ambivalence has surrounded my name until my career was well launched. In the industry, I certainly have always been known as Simon. But there are personal friends who call me Buddy or Bud, and there has been a certain uncertainty about just exactly who I am as a result of this.

Swent: Were you ever called by a Spanish name?

Strauss: No, not really, except my Chilean friends would call me Simón or Davíd. I've also been called Steamship, because of the initials S. S. My first wife sometimes referred to me as Peter, because of "Simon called Peter." She didn't like the name Simon very much. And my son is called Peter as a result of this. So it's been--

Swent: A lot of names.

Strauss: A lot of names.

Move to Chile, 1914; Father a Consultant Mining Engineer

Swent: Did you live in Peru very long?

Strauss: We lived in Peru from 1911, when I was born, until 1914. With the outbreak of the First World War in the middle of 1914, the demand for two products coming out of Chile enormously accelerated: namely, copper and nitrate. My father found himself traveling so frequently to Chile that he decided to move his office from Lima to the port of Valparaiso in Chile.

Swent: Was your father an independent engineer always?

Strauss: By that time, he was. He had originally gone down under contract to work at the Morococha mine. There was in those days a very real opportunity for independent consulting engineers due to the difficulties and length of time involved in travel. Mining companies in New York, London, Paris, or other financial centers who were approached to finance mining deposits in South America found that if they sent their own engineers out to examine these deposits, it would take three to four weeks for them to reach the site of the deposit, then three or four weeks for the return trip, during which there was little work for the engineers to do. And rather than set up offices until they had a viable property, they felt that it was more economic to use the services of a reputable consulting engineer.

And this was what my father did. At one time or another I think he examined mineral deposits on behalf of almost every major mining organization in the United States, Great Britain, and some of the European countries. They would employ him by cable communication. He would prepare a preliminary report. If it was favorable, then the companies might send out their own engineers to confirm the results of his examination. But he operated on this basis from 1904, or 1906 perhaps, after he finished his Morococha engagement, until 1927, when he finally returned to the United States. So he had a long career at this. He was very well known, and he worked with many of the really large companies that examined most of the major deposits in South America.

Swent: Tell me about the communication by cable. Where did the cables go? How did cables go from Lima or Santiago to New York, London, Paris--?

Strauss: There were actual--by that time, there had been international cable lines strung for the news organizations and for business enterprises. I often think about the reaction in the telegraph

office in Plattsburgh, New York, when my father's cable arrived suggesting that my mother come down to Peru to marry him. [laughing] That must have been a very amusing thing. No, it was quite feasible in those days to cable back and forth. These were copper cables strung on the ocean bed, they were across the Atlantic and across the Pacific.

Swent: So you could get word in a day easily?

Strauss: Oh, sure. But it was expensive.

Swent: I'm sure.

Strauss: And as a consequence, it was only used really for major communications. Communication by regular surface mail took an incredible length of time. A letter written in New York would be delivered in Lima sixteen to eighteen days later at the best, and then by the time you got a reply, it would be almost two months. Air mail was of course not known then.

Swent: They moved, then, to Valparaiso--

Strauss: Because of the fact that air travel was not known, all travel to the West Coast of South America was by ship. Valparaiso is the principal port of Chile, and within a short distance of Santiago. It was in fact the commercial center of Chile until the development of international air travel. Santiago was the political capital of the country, but Valparaiso was the commercial center. The stock exchange was in Valparaiso, not in Santiago, and it was the logical place for my father to have his office, because when you went to examine a property in northern Chile or in one of the other South American countries, he would travel by steamer.

There was a train, railroad service, from Valparaiso through Santiago and then on across into Argentina, and he would travel by train to do that. But most of his examinations were in northern Chile.

Swent: What mines were developed? Chuquicamata, of course.

Strauss: Chuqui was just being developed when my father went to Chile. The Braden mine, or El Teniente, as it's now identified, was also being developed at that time. He had a role in the development of both of those. He worked with Herman Bellinger, who was the first manager of the Chuquicamata enterprise, and he worked with William Braden, who was the developer of the El Teniente mine, and in fact the company that operated the El Teniente mine

originally was called Braden Copper Company, later was absorbed by Kennecott, and became a fully owned subsidiary.

When Chuquicamata was developed, it was developed by the Guggenheim brothers. It did not become an Anaconda property until the 1920s.

The Guggenheim Relatives, Straus with One "S"

Swent: Are you in any way related to the Guggenheims?

Strauss: No. There is a Straus family that is related, but that is a one "s" family. Roger W. Straus, who was the son of Oscar Straus, a well known political figure and great friend of Theodore Roosevelt's. Roger Straus married Florence Guggenheim, the daughter of Daniel Guggenheim, who was one of the seven Guggenheim brothers and was perhaps the most active of the seven in running the mining business. So after graduating from college, Roger Straus joined American Smelting and Refining Company [Asarco], but he spells his name with one "s" at the end of it; we spell it with two "s's."

Swent: I'm sure you're frequently asked that question. I thought we'd better clarify it.

Strauss: Yes. Well, further down the road, perhaps, when we talk about my employment by American Smelting and Refining Company after the end of the Second World War, there was an amusing aspect of this that I might mention, or perhaps I'll tell you now.

Swent: Why not just do it now, while we think of it?

Strauss: All right. I had met Roger Straus while I was in government employ; we were good friends. But the person I knew best at American Smelting and Refining Company was Kenneth Brownell, who was in charge of sales for American Smelting and Refining Company. As World War II came to a conclusion and it was clear that the work of the Metal Reserve Company was coming to an end, Kenneth Brownell approached me about whether I would be interested in working for American Smelting and Refining Company, and I was interested. A number of other people were kind enough to suggest that I might join them.

But because American Smelting and Refining Company handled so many different commodities, and because it was geographically so widespread with properties in Peru, Mexico, Canada, and a

major interest in Australia, I was much attracted to the company. I indicated to Kenneth Brownell that I was quite interested. He thought I ought to come to New York and have a talk with Roger Straus, who by then was president of American Smelting and Refining Company.

Mr. Straus, not entirely seriously, said to me, "You know, people refer to our company as AS&R, and some people say that AS&R stands for `All Sons and Relatives.' As a result, a lot of people will probably think you're related to me. I wonder if you would consider changing your last name?" [laughter]

I didn't take the suggestion too seriously, and of course, never considered changing my last name. But it is quite true that after I joined the company and I traveled around, it was widely assumed when I visited the mines and smelters that I was related to Roger.

Swent: One more of the relatives.

Strauss: Yes. In fact, at the same time that I joined the company, Roger's son, Oscar II, also joined the company in the financial side of the business, and we're roughly the same age, more or less the same size, and both have dark, curly hair. So many people assumed that I really was part of the family, and I had to disabuse them of that when I went around. But we are very good friends.

Father's Work with Guggenheims in Northern Peru

Swent: Your father had also done some work, then, with the Guggenheims in Chile?

Strauss: Yes, he had. He had not only in Chile but in Peru. He did a lot of work on what later became the Northern Peru Mining and Smelting Company up at Quirulvilca.

Swent: And that's in Peru?

Strauss: That's in northern Peru, near the town of Trujillo. And he knew Roger Straus quite well, so there was that connection. But my father worked not only for them but, as indicated, he worked with the Kennecott organization.

Examination of Rio Blanco-Andina Mine

Strauss: He did a major examination of the property in central Chile, which was then called the Rio Blanco mine, for the Nichols Copper Company, which later became a fully owned subsidiary of Phelps Dodge. This deposit in later years was examined by Cerro de Pasco and eventually developed by them as the Andina mine, which is now part of Corporación del Cobre--that's CODELCO, the Chilean state company. But it was originally developed by Cerro de Pasco and then expropriated in the [Salvador] Allende years.

Early Days at Morococha

Swent: Morococha is a Cerro de Pasco property, isn't it?

Strauss: Yes, that is right. But at the time my father worked for it, it was owned by a company called Backus and Johnson. It was before the Cerro company was consolidated. And it's still in operation; it's one of the longest-lived mines in Peru. Never been a huge operation. I have a wonderful picture of a group of llamas--most Americans call them "lamas"--carrying ore. It was a high-grade deposit, and the processing mill was located down in the valley some distance from the mine, which was, I think, somewhere between 15,000, 16,000 feet elevation. Actually, the llamas were used to carry the ore in sacks from the mine adit down to the processing plant. My father was a superb photographer, and I have a number of the pictures that he took of the mines in the early 1900s.

The Mackay School, Valparaiso

Swent: Did you start to school, then, in Valparaiso?

Strauss: Yes. I first went to a kindergarten for English-speaking children called Tia Edy's Kindergarten. I say that because it was a very well known institution, actually, in Valparaiso, but in 1919, I transferred to the Mackay School, which was a school founded in the 1840s by a Scotsman in Chile, a private school. The curriculum was largely in English, but several courses were given in Spanish. The effort was made to make it completely bilingual, and it was considered one of the best schools on the

entire West Coast of South America. More than half of the pupils were boarding pupils who came from northern Chile.

Sir Ronald Prain, who was head of the Rhodesian Selection Trust and who had been born in the Chilean port of Iquique in the nitrate regions up north, went to the Mackay School, and many years later, during the Second World War, when I met Sir Ronald Prain for the first time, we learned to our surprise that we had attended the same small school in Chile. Sir Ronald left school about a year before I entered it.

And as a further indication of how vital a commercial center Valparaiso was in those days, the first time I was in Germany after the end of World War II, I had dinner with the officers of the largest Germany company, Metallgesellschaft. One of them was a gentleman named Herbert Mooyer, and he proposed a toast in Spanish. When I asked him about it, I discovered that he had learned his Spanish in Chile, because he lived in Valparaiso, Chile, during the same years that I did. Needless to say, he did not attend the Mackay School, but we did become quite good friends.

Here was the unusual situation that, in the immediate postwar years, there were three of us in the copper business, one in London, Sir Ronald Prain; one in Frankfurt, Herbert Mooyer; and I in New York, who had all been boys in Valparaiso at the same time.

Swent: That's interesting.

Strauss: Yes. So Valparaiso was a wonderful place to live. It is a port, not unlike San Francisco. In fact, it had an earthquake the same year as San Francisco, 1906, which was almost equally disastrous. It is built on hills overlooking a bay, not as sheltered a bay as San Francisco's bay, but crowded with shipping.

So my first thoughts as a boy in Valparaiso were to make a career as a seaman, and in particular, I was tempted to go to the sea because a friend of my father's had given me Southey's *Life of Nelson*. It was one of the first serious books that I read. I became very familiar with Nelson's exploits, and I determined that I was going to be an admiral when I grew up.

Swent: And of course, in Chile the navy is--

Strauss: The navy is very important. Chile has more coast in relation to its area than any other country in the world, more than 3,000 miles from the north end to the Straits of Magellan. The harbor at Valparaiso, as I said before, was crowded with ships. One of

the really curious things is that during the war, a number of German cargo ships were interned in Valparaiso Harbor. Of these, one, the *Peking*, is now in the South Street Museum in New York. The peculiar thing is that every day, as I would walk to school and I would look on my left at the harbor, I would see the *Peking* anchored there. Sixty years later in New York, my office at American Smelting and Refining Company was four blocks from the pier where the *Peking* was anchored.

Swent: [laughs] You couldn't get away from it.

Strauss: No, I couldn't.

But the Mackay School was an excellent school.

##

Swent: What did you study?

Strauss: We studied the history of England, the history of Chile, the geography of Europe, the geography of South America. Needless to say, the history of Chile and the geography of South America were studied in Spanish; the history and geography of England and North America were studied in English. The only subject that we consistently studied in one language was arithmetic. That was always in English. As a consequence, if two of the Mackay School students, whether Chileans, English, or Americans, were discussing the outcome of a sporting match, almost inevitably when it came to discussing the score, it would be stated in English, even if the previous description had been in Spanish. One would say about a match between Chile and Uruguay on the soccer field, you might say, "Chile ganó facilmente, five to two." [Chile won easily...] [laughter]

Swent: So you were all really bilingual.

Strauss: Yes, entirely so.

Swent: That seldom happens.

Strauss: That's correct. But an interesting aspect of my parents' adaptation to life in South America was that, although my father lived in South America much longer than my mother did, he never lost his New York accent in speaking Spanish. My mother, on the other hand, spoke Spanish without a trace of accent, even though she had not known a word when she arrived in Peru. She was extremely fluent in Spanish, and grammatically correct in every respect. She had a great skill for language.

Swent: And did they have social friends among the Chileans as well as the Americans?

Strauss: Oh, yes, absolutely. Valparaiso was a cosmopolitan city, very much, as I said before, like San Francisco in that regard. My mother's best friend was a Chilean lady who had married a lawyer who was of American descent, actually of Californian descent. Their last name was Ward. But Lucha Ward, the Chilean wife, was my mother's best friend. A wonderful lady.

World War I: Mother and the Red Cross

Strauss: During the war years, there was a great deal of activity on the part of the English and subsequently the American community for assistance. My mother became very active with the American Red Cross, which had a branch in Valparaiso. She used to bake the pies that were served as dessert at the weekly meeting of the Valparaiso Chamber of Commerce, and raised money that way to give to the Red Cross. She even wore a Red Cross uniform, and eventually my sister Ruth also had to have a Red Cross uniform.

Swent: The nitrates were particularly strategic at that time, weren't they?

Strauss: That's correct, because synthetic nitrogen had not been developed. Nitrates were used both as a fertilizer and as an explosive. I recall one fundraising effort that my mother was involved in where there was a sort of a fair, and the children were all dressed in costumes. I was dressed as a carrot, believe it or not, and I had a real carrot, which I held in my right hand. I was supposed to be a carrot. The slogan draped across my body was, "After using nitrate." [laughter] In contrast with the carrot that I held in my hand, which was before using nitrate.

Swent: Before then, the Germans had bought the nitrates from Chile; is that right?

Strauss: Yes, they had, but they developed synthetic nitrogen during the war. That was one of the ways in which they got around the British blockade which denied them access to Chilean nitrate. But the Chilean nitrate business was a booming business during the war.

The Strauss-Allen Process for Nitrate Ores

Swent: Did your father get involved in that at all?

Strauss: Yes. In fact, I referred earlier to Arthur Allen, who was my first boss at McGraw-Hill. Arthur Allen was a British engineer, educated at Cambridge, and pretty much a metallurgist. He and my father worked on methods for processing nitrate ores, and developed one which was quite similar to the one that was eventually adopted by the Anglo-Chilean Consolidated Nitrate, incidentally another Guggenheim company, which was developed by a Norwegian engineer named Cappelen Smith. There was a lot of rivalry as to patent rights between the process that my father and Mr. Allen developed and the one developed by Cappelen Smith.

But all over northern Chile, there were these large nitrate deposits, and the ports of Antafogasta, Tocopilla, Iquique, and Arica were busy shipping millions of tons of nitrate to the United States and to England and France during the First World War.

Swent: Do you remember hearing of the end of the war? Was that an exciting event?

Strauss: Yes. Actually, I happened at the end of the war to be in New York. My mother decided in May of 1918 that it was time that our grandparents got a look at not only my sister Ruth and me, but also by that time, I had a younger sister, Frances; that we should go up to the States. And we did make a trip to New York.

Swent: That must have been hard.

Strauss: It was very hard. There was no problem sailing up the West Coast of South America, but after we transited the Panama Canal, we sailed through the Caribbean in blackout. I have a very distinct recollection of getting up in the middle of the night to go out on the stern of the deck, everything absolutely black, to look at the phosphorescent fish in the water; the dolphins can be seen in the water. But the ship sailed without lights.

But we made the transit safely. We arrived in New York at the beginning of June of '18, and we stayed in the States until January, 1919. So in the fall term of 1918, I was enrolled for the first time in a school in the United States. I went to Public School 165 on 109th Street in New York City, and I think it was the third grade. I remember the excitement on Armistice Day, when we all paraded around the streets. I recall having a

large tin can and rattling drumsticks on it, saying, "Down with the Kaiser." Which was the big slogan.

In January, 1919, we returned to Valparaiso, and remained there for the next two and a half years.

Swent: And then you moved back?

Strauss: Then, although the Mackay School was excellent, there was not comparable education available for English-speaking girls in Valparaiso, and my parents decided my sisters needed a better education than they were likely to get. So we sailed to New York. My father, however, remained in Chile, occasionally visiting us, until 1927. Those were difficult years for my mother, I'm sure, because of the length of time required for exchange of correspondence and everything.

Perhaps the most notable experience I had after our return to Chile in 1919 was at Thanksgiving time of that year. The Pacific fleet of the United States had been on station in the Atlantic during the war, because there was no fighting in the Pacific area. The German navy had been bottled up by the British, and the only problem was the submarine threat. So all of the U.S. Pacific fleet had been taken from its normal bases in Honolulu and San Diego and transferred to the Atlantic. They remained there after the end of the war during the early days of the peace negotiation.

But in the middle of 1919, President Wilson decided that the Pacific fleet should return to its normal stations. Instead of going directly through the Panama Canal, the fleet was instructed to make the circuit around South America, in order to improve relations between the United States and the countries of South America, some of which, Brazil and Argentina, I believe, had actually joined the Allies toward the end of the war. So the fleet went first to Venezuela, then to the Guyanas, then to Brazil, then to Uruguay, then to Argentina, sailed around Cape Horn, and came up the West Coast.

Thanksgiving Day, 1919, Dinner on a Battleship with an Admiral

Strauss: They arrived in Valparaiso harbor in the middle of November, 1919. The admiral decided to remain in Valparaiso for a couple of weeks, because it was an attractive port, and he thought the crew needed relaxation and rest. Since it was going to be there on Thanksgiving Day, he consulted with the American consul, who

was willing to advise the American residents of Valparaiso, Santiago, and the general vicinity that any boys, sons of American citizens, between the ages of six and sixteen, were invited to have Thanksgiving dinner on board one of the war ships.

I qualified for this privilege. I was told to go down to the wharf to board the admiral's launch to go out to the ship. The admiral had no idea of how many people might show up. There were actually only three of us. Two brothers from the El Teniente Mine at Rancagua had come down by train for this privilege. The three of us were the only American boys. There were lots of American girls, but we were the only boys, sons of American citizens.

Swent: That's surprising.

Strauss: In fact, I was the only one at the Mackay School at that time. So it was a great thrill--I was eight years old--to have Thanksgiving dinner with the enlisted men on their mess on a real battleship. But what was even more thrilling was that before it was time for us to return to shore, a Spanish cruiser steamed into the port with the crown prince of Spain on board, and it became necessary to fire a twenty-one gun salute in his honor. So we were given wads of cotton to stick in our ears, and were allowed to stand next to the five-inch gun while it was firing twenty-one salvoes. That was really the high point of my life. In fact, I'm not sure that it hasn't all gone downhill since then! [laughter]

Swent: The biggest excitement there could be.

Strauss: Right. You can imagine that my sisters were green with envy about this when I returned. And as I've commented since then, they both in later life became ardent feminists, and perhaps it was because of this discrimination against them on that occasion. [laughter] But it was a great experience for me, particularly since at that time I had decided that I was going to be an admiral when I grew up.

Swent: Well, of course.

Strauss: However, when it came time to return to the United States in 1921, we came up during the summer, and it was during the hurricane season. After a very peaceful and interesting ride up the West Coast of South America, through the canal, and into the Caribbean, by the time we reached the coast of the United States, we ran into an extremely heavy storm. I had been accorded the privilege of sharing a cabin with the ship's purser. The ship

was very crowded; it was one of the Grace Line boats. My mother and my two sisters had a cabin down in the passenger quarters, but I was on the officers' deck. And of course, that was also a big thrill for me, to share the purser's cabin.

I woke up in the morning; the ship was listing heavily. The mirror over the washbasin was heavily coated with salt from the spray, even though we were on the top deck of the ship. I felt violently ill. I managed to get downstairs to my mother's cabin, crept into her bed, and I said, "I'm not going to be a sailor." I was so violently seasick! So my decision to succeed Lord Nelson ended--

Swent: Right there.

Strauss: Right there and then. [laughs]

Swent: That must be terrifying.

Strauss: Yes, it is, when you get so nauseated.

I don't know what else I can tell you about our life in South America, except that it was very pleasant. We would spend our vacations up in the mountains. We had a seashore at Viña del Mar, a wonderful place to go bathing in the ocean.

Swent: And you have been able to go back on occasion, too, haven't you?

Strauss: Yes, since then. In fact, I've revisited the Mackay School on one of my recent trips. It has changed a lot since I was there. The curriculum is now 75 percent in Spanish and only 25 percent in English. But it is still considered a very good private school in Chile, and most Chileans are quite familiar with it.

II SCHOOL IN NEW YORK AND BEGINNING A CAREER IN JOURNALISM

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Swent: Did you have trouble when you came back and went into American school, then, in adjusting to the difference?

Strauss: Not really. Actually, I was ahead of my age, because I had had, of course, far more language studies, but also in subjects like geography and history and arithmetic, I was ahead of other children my age. So I was actually--I returned to P.S. 165, but even though I was just ten years old, I was put in with a class of mostly eleven- and twelve-year-olds.

Swent: But you had girls in class then too?

Strauss: No. At that time, only the first four grades in the New York schools were co-ed, and from the fifth grade on up, it was separate. My sisters had to go to a different school.

Swent: Oh, really? I didn't know that.

Townsend Harris Hall High School

Strauss: Yes. In my subsequent education after I graduated from elementary school, I went to a high school called Townsend Harris Hall, which was a three-year high school. It was for people with advanced grades, and I was able to graduate from high school while I was still fifteen years old. I studied French and German in high school, and I was known as David Strauss, because my mother had registered me there. [laughter]

Swent: Did you live with relatives, or did your mother have her own home?

Strauss: We first moved in with my grandmother until my mother found an apartment. We lived on the west side of New York City, between Broadway and Riverside Drive, close to Columbia University campus on 114th Street. The Townsend Harris Hall High School was on 137th Street, so I usually walked, but I could take the subway when the weather was bad to go to high school.

Editor of *The Family News*

Strauss: It was at this time that I decided to be a journalist. A friend of my aunt's had a spare typewriter which he gave me, and I taught myself how to type while I was twelve years old. Needing pocket money, I launched a business enterprise, a family newspaper, which had the unusual name of *The Family News*. I put it out once a week, every Friday, and made carbon copies, because I wasn't prosperous enough to have a mimeograph machine, and that was the method of duplication then. I charged five cents a copy, and I eventually had something like twenty subscribers among aunts, cousins, the like, grandparents. So I earned a dollar a week by putting out this newspaper. My mother subsidized the enterprise by paying for the paper and the carbon copies.

I did this for about three years. I still have a few copies of *The Family News* around, if I can find them. It recorded important events in the family. I had a bachelor uncle; I carefully in the gossip column traced his various affairs with young women. And other things that I considered notable.

While I was in high school, I had a friend who was something of an artist, and he used to do drawings for me for *The Family News*, so that it wouldn't just be unrelieved text.

Swent: Good practice.

Strauss: Yes. So while in high school, I became an editor of the school magazine, and I was determined to become an editor.

On graduation from high school, I enrolled at the College of the City of New York with the intention after two years of transferring to the Columbia School of Journalism to become an editor of the *New York Times*, as I saw it. But about halfway through my freshman year at college, my father's friend, Arthur Allen, came up from Chile. My father was then still in Chile.

He called on my mother to bring her the latest news of my father. And because he was an Englishman, my mother offered him tea. He had great difficulty making up his mind whether he would take lemon or cream with his tea. So Mother said to him, "I must show you something my son has written on this subject."

I had, in addition to doing *The Family News*, I had become the editor of a bulletin put out by a group of young people affiliated with the synagogue that my family belonged to, Temple Emanu-El. We had a junior society. The junior society, in addition to having dances and doing plays and things of that sort, once a month they had a lecture, which was open to the public, a forum. And we invited fairly prominent speakers. On one Sunday, the speaker was a professor of history from Smith College, Harry Elmer Barnes. And to our surprise, we got an enormous attendance of people, because he was a rather controversial speaker.

After the lecture, it was the custom to serve tea to the people present. Usually this was done by the girls who belonged to the society, but on this particular Sunday, with the large crowd and not very many girls present, I was persuaded to help with the tea service. I found to my horror that the tea tray was large enough for the teapot, the hot water, the sugar, and either the cream pitcher or the lemon dish, but not both. Inevitably, if I had the cream, people wanted lemon; if I had the lemon, people wanted cream. This struck me as being very inefficient.

So, as the editor of the bulletin of the junior society, I wrote a stirring editorial calling for larger and better tea trays. This was the essay that my mother called to the attention of Mr. Allen. He was amused by it. And this showed how ridiculous my career has been, really.

A week or two later, McGraw-Hill asked him to be the editor of the *Engineering and Mining Journal*, and he agreed.

Swent: He had been living in Chile?

Strauss: He had been living in Chile, but he wanted to take up residence in the United States, and he was offered this job. Possibly he made the trip in order to have the interview; I really don't know. But at any rate, he did become the editor of the *Engineering and Mining Journal*, and he decided to make some staff changes, or add to the staff. Recalling my article which had amused him, and my mother's informing him that I intended to go to the school of journalism at Columbia, he gave me a call. He said, "I understand from your mother that you're interested in being a journalist."

I said, "Yes, I am."

He said, "Well, I know you'll learn a lot at school, but I think you'd learn more by coming to work for us at McGraw-Hill." And he offered me a job at the salary of twenty-five dollars a week, which in 1927 for a sixteen-year-old was more money than I had thought existed. He said, "If you don't like it, you can always quit and go back to school, but I really need somebody fairly promptly."

III REPORTER AND ASSISTANT EDITOR FOR THE *ENGINEERING AND MINING JOURNAL*, 1927-1932

Covering the Metals Markets

Swent: And he could hire a sixteen-year-old at that time.

Strauss: He could hire a sixteen-year-old at that time.

Swent: Couldn't do it today.

Strauss: No. So I thought it over, and decided to take him up on it, because I was anxious to be a writer, and that's how I got involved with the mining industry. I really had not intended up to that time to have anything particularly to do with my father's profession, but I left school. I started work on November 15, 1927, at the age of sixteen. Because I was not an engineer, as most members of the staff were, I was not considered a suitable editor for the technical articles. The obvious fields where I could be useful were to proofread and to improve the language a little bit here and there, or, alternatively, to report the news or report about the metal markets. That is how I got involved in the economics of the minerals business.

Swent: *E&MJ* was a monthly?

Strauss: No, at that time, it was a weekly.

Swent: And *Metals Week* was--?

Strauss: It did not exist.

E&MJ Prices the Official Prices for Metals

Swent: I see, so *E&MJ* covered the whole--

Strauss: --thing. Every Wednesday, it was the custom for the editors to call on the principal sellers and buyers of copper, lead, and zinc, and to ascertain from them at what prices business had been transacted. We would be given in confidence by all of the leading sellers, and by many of the buyers, details of what they had bought or what they had sold, quantities, and prices actually paid. We would return to the office. We would tabulate it, we would calculate an average price, and those prices were known as the *E&MJ* prices at that time. Now they're called the *Metals Week* prices. But those prices were used in the settlement of most of the ore contracts.

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Strauss: The changes of those days would seem minute today. In other words, the price of copper would be 13.45 cents a pound, or the changes were on the basis of .05 of a cent. These prices were used in the settlement of contracts between buyers and sellers of ores and concentrates, and buyers and sellers of metal. The courts recognized these as being the legal prices, because contracts specified the *Engineering and Mining Journal* price.

Swent: How long had this been the accepted--?

Strauss: Oh, since before the First World War. McGraw-Hill had established a reputation for confidentiality and absolute accuracy. So, in addition to Mr. Allen, the other members of the staff were all much older men than I. The two that were reporting the markets when I joined *E&MJ* were Arthur Parsons, who later became the secretary of the AIME, and Edward H. Robie, who subsequently also became secretary of the AIME, succeeding Mr. Parsons. They were fine gentlemen, and I would accompany them on their trips in order to find out how to do this, and eventually I was allowed to go around and talk to people.

I became absolutely fascinated with the economics of the mineral industry and what caused prices to rise and fall. And while Mr. Allen had suggested that I could drop out any time and go back to college, I never did. I took a few night courses at an institution called the New School for Social Research, which--

The New School for Social Research

Swent: Oh, that was a very exciting place, wasn't it?

Strauss: It was an extremely exciting place on 23rd Street in New York. I learned a lot, but the courses I took, of course, were not at all concerned with mining or metals. They were broad discussions of political and economic trends. But it was--

Swent: And I'm sure you got exposed to liberal thought.

Strauss: And I got exposed to liberal thought there. And it was a very stimulating thing to do in the evenings.

Swent: Who were some of your teachers?

Strauss: Well, Alvin Johnson was the head of the New School at that time. I can't recall any longer the individuals that taught the courses I took.

Swent: Nobody in particular?

Strauss: No.

Swent: But the New School was a hotbed, wasn't it?

Strauss: Well, it was--well, I did take one course there with--yes, I recall now--with Professor Dewey, who was a great philosopher and thinker.

Swent: Education research.

Strauss: Yes. I used to do a few freelance pieces at the time for the *New Republic*, which was a liberal journal, based on what I knew about the mining business.

Swent: This issue of the pricing always amazes me. That's a tremendous responsibility, isn't it, to keep that confidentiality?

The Great Depression; Leaving E&MJ

Strauss: It is. Eventually, what happened was that the *E&MJ* became a monthly and they put out a weekly which was called the *Metal and Mineral Market News*, and later changed to *Metals Week*. The two staffs gradually split apart, but while I was at McGraw-Hill, it

was really all just one staff. When I left in 1932, the cause of my leaving was the change from a weekly to a monthly, and the need to, in the heart of the Depression, to economize. Because my salary was much the lowest of any member of the staff--

Swent: I presume it was over twenty-five dollars by then.

Strauss: Oh, yes. But interestingly, it had increased from twenty-five all the way up to fifty, but then during the Depression, McGraw put into effect three successive 10 percent wage cuts, which cut across board. Everybody took those wage cuts. So I was back down to some figure in the thirties. But it wasn't the salary that caused me to resign; it was the fact that I was the only unmarried member of the staff, by far the youngest. The others all had wives and children to look after, and I knew that somebody was going to be laid off. So I decided that I would leave.

The week after I left, the *New York Times* had only one help wanted ad for editorial help of any kind. It was for a suburban weekly newspaper, didn't identify which newspaper. I wrote a letter giving my background at McGraw-Hill. I thought, well, now I'll get into the mainstream of journalism. The newspaper involved happened to be a weekly published in Madison, New Jersey, a prosperous suburban town just outside Morristown. It happened that Mr. James McGraw of McGraw-Hill lived in Madison. So the publisher of the *Madison Eagle* called up Mr. McGraw and asked him if he could get any information about young Strauss who had written applying for the job. Mr. McGraw was good enough to give me a good reference.

IV EDITOR OF THE MADISON, NEW JERSEY, *EAGLE*, 1932-1934

Strauss: So for two and a half years, I was the editor of a suburban weekly newspaper and lived in Madison, became the official scorekeeper for the local semi-pro baseball team, attended all the meetings of the board of education and the town council, and so on. I enjoyed it. I wrote the whole paper. I was the editor and the only member of the staff. It was normally an eight-page publication, but sometimes ten or twelve pages. I wrote between 30,000 and 40,000 words a week, covering all the local news. We didn't try to cover news other than local news. It was a prosperous community, and I had a great experience there.

The Political Realities of Prohibition and the Mob

Swent: It would be wonderful training.

Strauss: I found out a lot of things about life. Two particular stories I covered indicate what life was like in those days. This was still during Prohibition. After Mr. Roosevelt's election, eventually Prohibition was repealed. But while Prohibition was on, of course, there was a flourishing trade in speakeasies. Madison had its share of speakeasies.

One of the great social distinctions in Madison was to be a member of the volunteer fire department. It was eagerly sought after by young men. Anybody was eligible. But the only people who ever actually got to be members of the volunteer fire department were people of Irish descent. One Friday evening, a group of volunteer fire department were in one of the local speakeasies, and this speakeasy was run by an Italian gentleman. There was a rather lively discussion about who were the better Catholics, Irish or Italians. When the volunteer fire department members got ready to leave and went to their car, they discovered

that somebody had thoughtfully inserted an ice pick into all four of their tires.

They immediately thought it was the Italians with whom they had had this somewhat heated discussion. So they went across the street to the police department and swore out a complaint against the speakeasy, even though they'd been drinking there. They swore out a complaint. Captain O'Farrell had a big problem, because he had a certain relationship with the owner of the speakeasy [laughter]. On the other hand--

Swent: A little supplementary income, perhaps?

Strauss: Yes. On the other hand, these were his Irish friends. So what to do?

He finally decided he couldn't ignore the complaint, and he conducted a raid. The raid was on the police blotter when I went around in the morning, so of course I wrote an item about it, including the fact that the police, in addition to seizing the liquor on the premises, had seized two slot machines.

The local police recorder, as he was called in New Jersey in those days, had a hearing, allowed the speakeasy owner--didn't hold him in jail--to be freed on the basis of $500 bail, which he posted. To everybody's surprise, the speakeasy proprietor skipped town, was never heard or seen from again. He would have just been fined probably $100. Discreet inquiries--and I never published this story--revealed that his problem was "Dutch" Schultz, who then controlled northern New Jersey, had only licensed him to have one slot machine, and I had published the fact that he had two. He was scared for his life. That gives you a little flavor of what the Mafia--

Swent: They were very powerful, even then.

Strauss: The other story is equally amusing. Madison and the adjoining town of Chatham had a joint sewage treatment plant. It was one of the first sewage treatment plants in the country. Most sewage was just dumped in the rivers, but they had a chemical plant for the treatment of sewage. The superintendent of the plant, a fellow named Paul Molitor, was a good friend of mine. We were both members of the Madison Kiwanis Club. He told me that one day, to his amazement, the sewage plant didn't work, because the bacteria that were counted on to do the work of purifying were not in the sewage. He couldn't imagine what was killing these bacteria.

So, being a careful man, he went from manhole to manhole, dipping buckets in to analyze the sewage. He found where the problem was, where the bacteria were dying. Madison was known as the Rose City. There were a large number of greenhouses there where roses were grown for sale in the New York market. An abandoned greenhouse had been converted into a distillery to make bourbon. The mash that came out of this that was dumped into the sewer was so powerful, it was killing all the bacteria! [laughter] So of course, the distillery was put out of business, and the chemical treatment process was restored to its normal operation.

Swent: Were you allowed to write a story about this?

Strauss: I wrote it.

Swent: You could do a feature on that?

Strauss: Yes. [laughter] So those are only two of the amusing episodes that happened while I was the editor of the *Madison Eagle*.

Voting in the 1932 Election

Swent: I asked you earlier about your first voting experience. That was before you went to Madison?

Strauss: It was while I was in Madison.

Swent: While you were there, the election?

Strauss: Yes. I went to Madison in March of 1932. My first election was in November of 1932. I was twenty-one in July of 1932. But I did not vote in Madison, because I retained my residency in my parents' home. By then, my father was in New York, and my parents were living in New York City, and I used their address, voted in New York.

Swent: And your first vote was cast for--?

Strauss: Was cast for Norman Thomas, who was the Socialist candidate for president.

Swent: Did you feel excited about that?

Strauss: Oh, sure.

Swent: Were your parents voting for Norman Thomas?

Strauss: Oh, no. I have no idea who they voted for. I didn't ask them.

Swent: Your family didn't discuss politics?

Strauss: Not to any great extent. I think my mother tended to be a Republican, my father to be a Democrat. Hoover was a close friend of my father's--by correspondence, because they were both mining engineers. And in fact, my proudest possession is an original edition of Hoover's translation of *De Re Metallica*, signed by Hoover, with a letter of transmittal from Mr. Hoover dated in 1913, the year after publication, to my father, sending him a copy of the book. So my guess is that both of them voted for Mr. Hoover. My mother knew Mrs. Hoover well through work in the WAAIME [Woman's Auxiliary to the American Institute of Mining and Metallurgical Engineers].

Swent: Oh, did she?

Strauss: Yes.

Swent: Did they live in New York then?

Strauss: No. My parents lived in New York, but the Hoovers lived in Washington. But the New York section of the WAAIME went to the White House on several occasions to meet with Mrs. Hoover.

Swent: That was exciting.

Strauss: Yes.

Swent: And the Depression in Madison must have been--?

Strauss: It was horrendous, as it was everywhere, except Madison was a prosperous town. The day that Mr. Roosevelt took office, you may recall, he closed the banks. There was a banking crisis. This was over a weekend, as I recall, that the banks were closed. One of the stories I reported was an attempt--successful--to remove the safe from the local movie theater. Burglars broke into the theater, took out the safe. There was probably more cash in that safe, because of people who had gone to the movies that week, than any other place in the town. And undoubtedly, that was why it became the object, because the banks were all closed.

The safe was later found. It had been blown open some distance from town in an open field.

Swent: Did you have any money in the bank?

Strauss: I had a little money in the bank. But everybody was in the same boat. You couldn't cash a check. It lasted a few days until--. But the banks were gradually reopened.

The Morro Castle Fire and the Captain's Cat

Strauss: Another story that I just recalled that you might like to know: I had intended to become the editor of the *New York Times*. I never made it, but I was the correspondent for the *New York Times* in Morris County, where Madison is located. One morning in 1934, I think--I'll get the exact date for you--I was awakened early by a phone call from the city desk at *New York Times* asking me to go to an adjoining little town called Green Village to interview a Mrs. Warms. Mrs. Warms' husband had been the first mate on board the liner *Morro Castle*. This was a ship that plied between New York and Havana. The *Morro Castle* was on fire.

The captain of the *Morro Castle* had died shortly after the ship left Havana, and Warms as the first officer had taken over as the acting captain. The *Times* learned that he lived in Green Village. They were anxious to find out if his wife knew where he was; would I go down and interview his wife? This was about six o'clock in the morning that I got the call.

So I promptly got up, went down to Green Village, rang the bell. A lady answered the door; she was obviously just getting dressed. She said, "What can I do for you, Sonny?"

I said, "Are you Mrs. Warms?"

She said, "Yes."

I said, "Have you heard from your husband?" not wanting to talk about the ship being on fire.

She said, "I heard from the Ward line. I'm not to tell nothin' to nobody." She spoke with a pronounced Georgia accent; I think he must have met her in Savannah or some such place.

I said, "Well, are you sure you can't tell me about your husband?"

She said, "Sonny, I'm in a big hurry, and I'm going to have to leave." It was obvious she was going to meet him somewhere, assuming that he was alive. She said, "I'm worried about my cat."

I said, "What's the problem with the cat?"

She said, "Well, I don't know when I'm comin' back, and my cat's got to be fed. Here's two dollars," which she gave me. "Would you buy a can of salmon and feed my cat twice a day?"

So my role in the great *Morro Castle* disaster, in which over 200 people died, was to feed the captain's cat. [laughter] I was conscientious about it. It was a nice cat. I went back. The house was locked up, but the cat stayed outside. She had given me a dish to give him the salmon in.

A week later, I got a report of an automobile accident. The car had run off the run on Shunpike Road coming in to Green Village, hit a telephone pole. The occupants of the car were not badly hurt. It was Captain Warms and his wife. I think they were intoxicated. They must have--he'd been sequestered somewhere to keep him away from the press for a full week, and I think his wife had joined him. I think they had been drinking the whole time.

It was a terrible accident [the *Morro Castle* accident]. Most of the people needlessly lost their lives, because the ship eventually drifted to shore at Asbury Park in New Jersey, and they could have jumped into shallow water at that point. But instead, many of them jumped off the ship while it was burning while it was still at sea.

Swent: And he got off somehow?

Strauss: Yes, he got off. Other members of the crew--the crew panicked. This was a ship that just went from New York down to Havana and back. It was a week cruise. Many people got off and stayed for a week in Havana and then caught the next one back. Havana was the nearest place to New York where you could gamble freely in those days.

Swent: So your role was pretty important, I guess. [laughter]

Strauss: That's right. But shortly after that, I left the *Madison Eagle*, because I thought I'd learned all there was. There seemed to be an opportunity to get a job working in Toronto for the *Financial Post*. They had a mining page, for me to be the editor of the mining news. My father was friendly with the editor of the *Financial Post*. By then, my father was stationed in Canada. He was an exploration engineer with Anaconda at the time, and he was stationed at a place called Kirkland Lake. He had met Mr. Chalmers, the editor, and thought I might get a job.

Well, I won't go into all the details of that, but it didn't work out. So I'd given up the job in Madison, and there weren't many jobs. It was 1934, and things were tough. So I did a little freelance writing, not too successfully. Eventually I got a job--or I thought I got a job--working with a fellow who was going to give a series of lectures across the country about Alaskan grizzly bears. I was to be his secretary, help get him publicity and so on. That was a complete frost. I won't go into that, because to tell the whole story would take more than a tape.

We wound up--he thought he could get lecture assignments in the South--we wound up in Florida. My mother was in Florida then recovering from an accident. She was well enough so that we didn't need to keep a nurse any more. So I stayed with her for three months in St. Petersburg. We returned to New York on April 10, I think, 1935, by ship. When we got to the apartment--my younger sister was alone there--she reported that Mr. A. B. Parsons, secretary of the AIME, had been trying to reach me.

V MINING SECURITIES ANALYST FOR STANDARD STATISTICS COMPANY, 1935-1941

Getting a Thorough Grounding in the Mineral Industry

Strauss: I called him. He said, "Standard Statistics Company is looking for an analyst on mining securities, and I suggested you might be the man for them." Gave me the name of the man to go see.

I went down, I saw a fellow named Ken Heston, who was in charge of hiring the security analyst, and two hours after returning to New York from Florida without a job, no prospect for a job, I had a job at Standard Statistics as their mining securities analyst. Standard Statistics Company was the predecessor of today's Standard & Poor's Corporation. They do bond ratings, and they publish a lot of material, different kinds, including separate sheets on each company listed on the major exchanges.

So it fit in very well with what I had learned at the *E&MJ*, and I remained with Standard Statistics from April of 1935 until March of 1941, six years. Eventually they added--I started off just covering the metal mines--eventually they added the coal industry and later the construction industry to the areas that I was covering.

Swent: Did you just deal with information that the companies gave you?

Strauss: No, I went and interviewed the companies, and I got to know--

Swent: Still doing investigative reporting.

Strauss: Right. And of course, I had met many of them when I had worked for the *E&MJ*. But I got to know many others quite well, and it was a very interesting assignment. Not terribly profitable, but gradually my remuneration was increased. Salaries were modest in

those days. I remember I started at fifty-two dollars a week, and then I got up to sixty dollars, and when I got married I got a big boost to seventy dollars a week. We thought that was a pretty good salary.

Swent: That was.

Strauss: And I learned enough about the securities, and I began doing a little investing on the side. I didn't do too badly in the stock market, so that was good. But I did get to know a lot about all the mining companies listed, and not just the copper, lead, zinc, silver, and gold companies, but iron ore, vanadium, the nonmetallics companies, and it gave me a very thorough grounding in the industry, simply by studying and talking to people.

I got married during that period, as I've indicated. My first child was born while I was employed at Standard Statistics Company.

Swent: Were you living back in New York City then?

Strauss: We were living in New York City. I should report on a dramatic experience during those years. I indicated I started working for Standard Statistics in April. Happy to get a job, and my parents had an apartment where I could have lived, but it would have been crowded, I looked around for an apartment of my own. I found a little place in Greenwich Village on Barrow Street, which was a short distance away from where Standard Statistics had its office.

Father's Death; a Pioneer in Andean Aviation

Strauss: My father had gone off to Colombia to look at gold properties. One day on my way to work I picked up the *New York Times* and casually glanced at the headlines as I was walking to work. There was a report of an airplane accident in Medellín, seventeen people killed. I immediately knew my father was on that airplane. Whether my eye had caught his name or not, I can't say, but I had the immediate reaction. And he was.

He had been in Medellín looking at some gold properties for Anaconda, and had decided that one of them was of sufficient interest that he should go to the capital, Bogotá, and talk to the government people about it. He booked passage on this airplane. It was standing next to the runway warming up when another plane took off the wrong way down the runway, with the

wind in back. A gust of wind blew it off the runway. It collided with my father's plane. Everybody in both planes was killed.

An effort had been made to reach my mother, but because my father was away, she was staying with my older sister, who was married. There was nobody at my parents' apartment to answer the phone. So we all learned about my father's death from the newspaper.

Swent: Oh, my.

Strauss: It was rather fitting, in a way, if death is ever fitting, that he died on an airplane, because he had been a pioneer in the use of airplanes for the mining industry.

Swent: I was thinking, people didn't fly casually in those days.

Strauss: Well, in 1919 or 1920, he had accepted an assignment to examine a deposit in Argentina and had planned to take the Trans-Andean Railway from Chile to Argentina. But there had been an avalanche, and the railway was knocked out of service. He had two options, he thought: one was to take a ship. There was a ship service, believe it or not, between Valparaiso and Buenos Aires going down through the Straits of Magellan and back up. That trip took about two weeks.

The alternative would have been to have hired a guide, Indian guide, and take a burro train through the mountains, which he was quite prepared to do. It was long, and this was in the period when there was heavy snows. So he was reluctant to do that.

Then an Italian aviator named, I think, Balbontini, decided to try to fly from Chile to Argentina. First time it had ever been done. He said to my father that he heard that my father was trying to get to Argentina. It was a two-seater plane, open cockpit, biplane. He was going to fly through the Upsallata Pass, lowest point, 14,000 feet above sea level, no oxygen. Would my father care to go with him?

My father went along. No stewardesses with coffee, [laughs]--

Swent: No oxygen bags.

Strauss: No oxygen, nothing. They made the trip successfully. The first crossing of the Andes by air from Santiago to Mendoza. So he was a great pioneer.

When Anaconda sent him up to Canada, he spent a lot of time flying around on those little amphibian planes, landing in lakes to examine remote mining properties. So he had no concern about flying.

Swent: What a tragedy.

Strauss: Yes. And what a shock for my mother, because they were very close. Under Colombian rule, the remains cannot be shipped out of the country for six months because of disease problems. So I suggested to her, and my sisters agreed, that we make no effort to bring back my father's body, so he's interred in the local Protestant cemetery in Medellín.

On the other plane, one of the passengers was the most famous Latin American movie star, a fellow named Carlos Gardel, an Argentinian, a singer and dancer. Anybody in Colombia, not just of our age but even younger, knows about that accident because of Carlos Gardel having been on that plane. The other plane was clearly at fault, but it was a government-owned airline. The board of inquiry decided this was an act of God, so there were no damages. We didn't even get a refund of my father's airplane ticket.

Swent: Did you have to tell your mother? Were you the one who had to go and tell?

Strauss: My sister told her. My sister had read it in the paper. By the time I got to a phone and called, my mother had already known.

Swent: Oh, how terrible. But he was working for Anaconda?

Strauss: He was working for Anaconda at the time. My father's class at Columbia included a student who later became the very well known Anaconda geologist, Reno Sales. They were classmates and good friends. That's how--and there was a chap named Bill Wraith who was also at Anaconda who was a good friend of my father's. So when my father came north from Chile, after an interval of a few months, Anaconda offered him this post and he worked for them, mostly in Canada. But he made several trips to Latin America for them. He went down to Venezuela to look at gold properties.

Swent: You must have missed him terribly. He would have been a good consultant for your job.

Strauss: Yes. Well, actually, of course, I had just started. I remember our last lunch together. We lunched at a restaurant downtown near the Anaconda office shortly after I had joined Standard Statistics Company, and then he sailed a few days later. So my

job at Standard Statistics lasted only a short time before his death.

Among my father's very good friends were a couple of geologists named Hoffman, Bob and Arnie Hoffman. I don't know if you've run across their names.

Swent: No, I haven't.

Strauss: They were very successful geologists, particularly up in Canada. But my father became friendly with them, and he had done a good deal of work with them in Venezuela in the early 1930s. After my father's death, I used to talk to them a lot, because they knew a lot about what was going on, and they were very helpful to me.

A Plunge With The Thompson Prospecting Syndicate

Strauss: One of my more exotic financial adventures came about through the Hoffmans. In 1936 or 1937, they decided that prospects were pretty good for finding gold deposits in the Northwest Territories of Canada, and they decided to form a little syndicate called the Thompson Prospecting Syndicate. It was called the Thompson Prospecting Syndicate because they were going to hire a fellow named Freddy Thompson to actually do the preliminary work up there. They sold units in the syndicate for fifty dollars. Well, fifty dollars was almost a week's salary for me, but I decided to plunge, and I bought a unit.

In all, they sold eighty-nine units, so they raised $4,450, and with that, they leased a plane and sent Freddy Thompson up there. He was flying over these lakes, and he looked over the edge, and he saw what looked like a promising prospect. So he had the pilot land. After they landed, he went ashore, and he found an outcrop with gold. He had a partner named Lundmark, and we formed the Thompson-Lundmark Mining Company. Each member of the original syndicate got 4,500 shares of Thompson-Lundmark stock, but it was in escrow. You couldn't sell it until the property got into production.

A couple of years later, it started producing. It produced for several years. Never made enough profit to pay a dividend, but it did produce. It was listed on the Toronto Mining Exchange for many years. They acquired other properties. The Hoffmans were fairly ingenious; they kept the thing going for years. So eventually I was able to sell off the shares; I sold a little from time to time.

However, in 1953, when I decided to buy this house in Lenox, Massachusetts, I still had about 2,000 shares of Thompson-Lundmark stock left. I had to put up cash for the house. I was getting a good salary, but I was really strapped, because of my wife's illness. I had to put up cash to buy this place. I sold my 2,000 shares of Thompson-Lundmark stock for a little over a dollar a share to make the $2,500 down payment on this. I got a mortgage for $7,000. The total price was $9,500 for this house. So in a sense, I parlayed my fifty-dollar investment in the Thompson Prospecting Syndicate into this house. [laughter] That's the most profitable investment I've ever made. According to the town of Stockbridge, the assessed value of this property now--mostly the land, but including the house--is $280,000.

Swent: Oh, my! [laughter]

Strauss: Of course, I have no intention of ever selling the house.

Swent: So your fifty-dollar unit was a good investment.

Strauss: It was a good investment. I had confidence in the Hoffmans. Arnold Hoffman was an author. He wrote a book--a number of novels--under a pseudonym. But in addition, he wrote a book on gold which was quite successful in the fifties and sixties, and they were extremely successful. Very aggressive, sometimes offensively so, with people. But they certainly knew their geology. Do you know a fellow named Thayer Lindsay?

Swent: I've certainly heard the name, yes.

Strauss: Well, they were associated with Thayer Lindsay for a while, and they were in on many of his major developments, like Falconbridge.

Swent: Yes, Canada was where he operated.

Strauss: Canada, and the Treadwell Mine.

[tape interruption]

Swent: We're continuing on August 23 after a lunch break. We thought that we had been a little cursory in our discussion of Standard, and I think so, because you were there for several years. Do you want to talk in a little more detail about exactly what it was you were doing there?

Strauss: Very good. Standard Statistics Company, as it was then constituted, was a major financial advisory service. It had thousands of subscribers all over the country. It provided

detailed analysis of all the important corporations whose shares were listed on the major exchanges, including, I think, the over-the-counter stocks. These analyses were prepared by individual analysts who concentrated on particular industries. In addition to the individual stock analyses, a weekly review of the financial markets and the outlook for the economy as a whole was the issue, called *The Outlook*. Also, periodically for most industry groups, there was a quarterly analysis of the outlook for an entire industry.

My duties were concerned with the production of the individual security analyses of the individual companies, with the preparation of the overall mining industry outlook on a quarterly basis, and with making contributions to the weekly *Outlook* publication. When significant developments occurred in the industry, I covered them. As I said earlier, I started out as the analyst for the metal mining securities, but later this was expanded to cover the coal mining industry, the nonmetallic minerals industry, and eventually the construction industry.

Actually, about 1938 or '39, I'm not sure of the year, the company published a book, which was issued by Harper and Company, called *Two Cycles of Corporation Profits*. This was a book that purported to describe what had happened to the major industry groups during the Great Depression and to discuss the outlook for the future. I wrote the chapters on the nonferrous metals industry, on the coal industry, and on the construction industry. One of my colleagues, who did the analysis on the steel industry, covered the iron ore mining companies, so I did not write that chapter.

Predicting the Success of Phelps Dodge and Asarco

Strauss: It is quite interesting to look back and read that report in the light of the perspective of more than fifty years. Significantly, in my discussion of the outlook for the nonferrous metals industry, I picked two securities as companies that in my opinion would show the best return to investors over the period of the next business cycle. The two companies I selected were Phelps Dodge and American Smelting and Refining Company. I did not pick Aluminum Company of America, which I suspect probably has had the best record over this period of time. And I particularly avoided either Anaconda or Kennecott because I was concerned about their exposure to their risks in Latin America. That book, of course, is ancient history now.

Swent: But you've been proved right, certainly.

Strauss: Yes. It's ancient history now; I don't know that many people have read it, but it's sort of amusing once in a while to read that chapter once again.

Swent: Did you confer with anybody else, or were you all on your own in making these analyses?

Strauss: Well, no, because I reported to the gentlemen who were responsible for securities analysis, a Mr. Ken Heston and a Mr. Schmutz, a very unfortunate name but a very nice man. His name was Charles Schmutz. And then the editor of the book as a whole was the company's leading economist, who was a much respected economist by the name of Lawrence Sloane, and he's credited as being the principal author as well as the editor of this book. They had an input, but the selection of the companies that I thought were the best was really my responsibility. They challenged some of my assumptions, but it was my responsibility, as it was for the other industry analysts in their selections.

I can't say that the book was a best-seller. In fact, I don't believe I've ever come across anybody in recent years who has read the book.

Swent: Why did you particularly like Phelps Dodge and AS&R?

Strauss: Well, I felt the AS&R had a diversified group of assets that were very significant. I was particularly impressed at the time with the prospects for its investments in Australia, the Mount Isa Mine. And I liked Phelps Dodge because it was almost entirely domestic. It had excellent plants, and in my opinion very good management.

Swent: Well, you were right.

Strauss: But they at least survived--

Swent: Over time.

Strauss: --over time, which was not true of many of the other companies in the industry.

The work at Standard Statistics was extremely challenging, and I enjoyed it. I spent a lot of time talking with securities analysts of the individual brokerage companies who would call me and ask me questions, or try to exchange opinions with me. Some of the major investing organizations, like the pension funds and insurance companies, would talk to me about whether I considered

it was appropriate for them to invest in such and such a security.

Swent: Of course, they had analysts who specialized also.

Strauss: They had analysts, that's right, and we exchanged opinions, but when they were putting millions of dollars at risk, they wanted more than one opinion.

Swent: Who were some of the other analysts who were specialists in mining at that time?

Strauss: None of them are still alive. There was a very nice fellow for Shields and Company whose name escapes me. There was a fine fellow named Heinbecker who was responsible for investments at Continental Insurance, now Continental Corp. Well, I can't think of them at the moment, the names. We had a very good group at Standard Statistics, and I was proud to be one of them.

One of my close friends at Standard Statistics was a gentleman by the name of Howard Trueblood. Howard was one of the editors of the weekly *Outlook*.

Swent: And that still exists.

Strauss: That still exists, yes. Howard left Standard Statistics and went to work in the economics department of the State Department sometime about 1939 or 1940.

Metals Prices During the Late 1930s; European Rearmament

Swent: I'm just trying briefly to think--of course, the gold price was fixed at that time.

Strauss: It had been fixed in 1933.

Swent: At thirty-five?

Strauss: At thirty-five dollars an ounce. The price of silver was fairly constant during this period because of the program that President Roosevelt had initiated to purchase silver of domestic origin at a fixed price, which turned out to be above the world price during the time. So that the domestic miners, in essence, sold all of their silver to the government, went into treasury holdings, a program that was very much criticized at the time by the financial press in the East--the *New York Times*, *Harper's*

magazine I recall wrote a highly critical article. Silver consumers were unhappy because, by taking all the domestic silver off the market, they felt that the United States was subsidizing silver producers and keeping the price that they had to pay for silver higher than they needed to.

Swent: What was the situation with the nonferrous metals?

Strauss: Well, the price of copper had a period of very sharply rising prices during 1936 and '37 due to rearmament programs announced by the British and the French. President Roosevelt made a very critical statement about the copper price, to the best of my recollection, in either late 1937 or early 1938, and as a result of that, the price actually dropped for a while.

But then, with the outbreak of war in 1939, the complexion of all the markets changed completely.

Swent: How much in advance of our getting into the war was it affecting the metals markets? It was affecting from Europe, of course.

Strauss: Yes, but these were world prices. The actual developments in Europe had very curious effects on the world market. For a while, from September of 1939, when the war started, until June of 1940, at the time of the fall of France, the markets tended to be quite strong, because it was assumed that there would be large requirements for metals in connection with the fighting. The British government, through its Ministry of Supply, had arranged to buy the production of metals from its own Commonwealth, principally Canada, Australia, and Africa, not only South Africa but also northern Rhodesia. This supplied the British pretty well.

But the French and their potential allies--Scandinavia, Belgium, Holland, and so forth--had to buy materials from Latin America, from the United States. So there was good demand for metal. The Germans were cut off by the British navy from access to these markets. Italy had not entered the war until 1940, and endeavored to purchase materials. But the mining enterprises controlled by American or British capital were very chary about selling to Italian buyers, because of their alliance with Hitler in Germany.

Pre-War Metals Trade with Japan

Strauss: The Japanese were anxious buyers, but there was a good deal of pressure from the British and U.S. governments on British- and U.S.-controlled companies not to sell excessive quantities to Japan.

Swent: They were selling scrap, I remember.

Strauss: There was a lot of publicity about the sale of scrap, but generally speaking, a close eye was kept on the amount of business being done with Japan, in view of the fact that they were being very aggressive in China and we were concerned about that. However, there was no outright prohibition of trade.

Swent: Had the Spanish Civil War affected markets at all?

Strauss: Not to any great extent. Spain had a small amount of production. The consumption of metals in the Spanish Civil War wasn't of major amount. They did not tend to buy metals; they bought armaments where they could. But the volume of demand--their ability to finance such purchases on both sides, both the Republicans and the Falange, was limited. They were supplied by Germany and Italy with materials under their first program to assist the Falange.

The Fall of France; a Dramatic Change in Latin American Metals Markets

Strauss: The dramatic change came with the fall of France, because with the fall of France, it meant in effect that the producers of metals in Latin America no longer had access to the European continent. It meant that they had lost their customers in France, Belgium, Holland, and Scandinavia. And as a consequence, in Mexico, Peru, and Chile, stocks of metal began to accumulate. Demand in the United States was rising, but not to the extent that it absorbed the stuff that had previously been going to Europe.

In the fall of 1940, President Roosevelt took dramatic steps arising out of the fall of France. With regard to raw materials, he decided that the old-fashioned methods of government procurement through the Treasury Department were too bureaucratic, too time-consuming.

VI THE RECONSTRUCTION FINANCE CORPORATION, 1941-1945

Roosevelt Expands Hoover's Plan: Four Subsidiaries

Strauss: He [Roosevelt] decided that perhaps the United States might be drawn into the war. He didn't say that publicly, because there was a strong isolationist sentiment in the country at the time. But he did say to Congress that the protection of the country was important, and that it might be necessary to act quickly. He recommended that the Reconstruction Finance Corporation, which had been established in 1933, actually under the Hoover administration, before Mr. Roosevelt took office, to help offset the effects of the Depression, to make funds available for financial industrial projects, that this corporation should now form four subsidiary corporations. I would like to describe what those corporations were.

Rubber Reserve Company

Strauss: First of all, there was the Rubber Reserve Company. There was great concern about the availability of rubber in the event that the war should spread to the Pacific. Synthetic rubber processes were being researched at the time, but a successful process had not yet been developed. There was a strong feeling on the part of people in the rubber trade that we should accumulate as much natural rubber as possible, since the transportation of the defense forces and the civilian population depended on rubber for tires.

Swent: There was no plastic yet, or almost none.

Strauss: No.

Metals Reserve Company

Strauss: Secondly, a company called Metals Reserve Company was established to ensure adequate supplies of minerals and metals.

Defense Supplies Corporation

Strauss: Thirdly, a company called Defense Supplies Corporation was formed to supply other scarce and critical materials of vegetable or animal origin: such things as the raw materials for the production of rope; pharmaceuticals needed various rare elements like quinine, rotenone. If we were to be engaged in a war effort that involved fighting in Arctic climes, and before the present developments of textile materials to provide warmth, goose feathers and down were considered to be strategic materials. Hog bristles from China were said by the navy to be the best product for making paintbrushes to paint battleships. So Defense Supplies Corporation covered this wide array of nonmineral strategic materials.

Defense Plant Corporation

Strauss: And finally, there was an outfit established called Defense Plant Corporation. Defense Plant Corporation was a government corporation that would build facilities to produce weapons, or munitions, or other materials deemed essential in the event that private industry was not prepared to risk money, because after all, war requirements are ephemeral. Once the war is over, a plant built to build tanks is no longer a useful asset. Defense Plant Corporation was to build facilities actually owned by the government but operated by private companies that would be licensed to run them.

So this legislation was proposed by Mr. Roosevelt in the fall of 1940, and was enacted more or less at the same time that the legislation was enacted for the Lend-Lease of materials to the British.

Swent: I was just going to ask when Lend-Lease came, if it wasn't about that time.

Strauss: It was at that time. So there was this heightened recognition of the fact that the British were almost alone in facing the Axis powers. The Germans had not only overrun France, Belgium, Norway, and Denmark, but they were threatening Yugoslavia and Greece, and by June of 1941, of course, there was the concern about a possible invasion of Russia, which in fact did develop.

On Washington's birthday weekend of 1941, my wife and I went down to Washington. Our son was not quite a year old, but we went down to Washington to spend a holiday with friends who were living in Washington. I took advantage of that occasion to call on my friend Howard Trueblood at the State Department.

Consultant to Gabriel Heatter, Radio Commentator

Strauss: Mr. Trueblood introduced me to the chief economist at the State Department, Herbert Feis, and both of them discussed the minerals situation with me. I had been doing, with the knowledge and consent of the people at Standard, some work for a radio program by a commentator called Gabriel Heatter, who did a nightly analysis of developments in the war and who wanted some background on what the significance of various developments were with regard to strategic considerations of raw materials supply. I had been regularly talking with Mr. Heatter, keeping him posted on the significance of various military developments, what territories were favorable, what weren't favorable.

For example, when France fell, some of the French Colonial Empire acceded to the standard of General Charles de Gaulle, who formed the Free French Movement. Others of the French Colonial Empire had decided to remain loyal to the government in Vichy established by Marshal Petain. As the history books show, the British were very concerned about this development with regard to the French colonies, and since some of them were significant producers of raw materials, Gabriel Heatter was anxious to know which ones produced what, and I was his source of information on this.

It was all very interesting, and I recounted this to Dr. Feis and Mr. Trueblood when I met them in Washington. They said to me, "You better go over to the RFC building and see Mr. Will Clayton," who was in charge of the four wartime subsidiaries that President Roosevelt persuaded Congress to create. They called Mr. Clayton and he asked them to send me right over.

Meeting Will Clayton, Chairman of the RFC Subsidiaries

Strauss: When I saw Mr. Clayton, he asked about my background, and I explained that I had worked as a journalist for McGraw-Hill covering the metals industry, and then subsequently I had become a securities analyst covering the metal industry. His background was entirely outside minerals and metals, but he was an exceptionally able negotiator and businessman, and because his fortune had been made in cotton trading, he understood the mechanics of world markets very well. But he did not know the details. He said, "I need you. You're just the man I need, because I want somebody who understands how these markets operate but where there's no conflict of interest. I see from what you tell me that you've never worked for any of the major metal producing companies."

I said no, I had not; my father had had association with them, but I had not.

He said, "Can you give me some references?" I named two gentlemen who I knew very well, because they were friends of my father from Latin America. Purely by chance, they were waiting outside Mr. Clayton's office at the time I was talking to him. One was Will Flatow who worked for W. R. Grace Company, which was a major importer of the mineral raw materials at the time, and the other was George Easley, who had operated tin mines in Bolivia.

Mr. Easley and Mr. Flatow were there to see Mr. Clayton in connection with the project to build a tin smelter at Texas City, which would be built by Defense Plant Corporation, operated by Metals Reserve Company, with the consulting aid of a group of people from the Dutch firm of Billiton. The point being that there was no American company that had any experience in tin smelting at that time. So Mr. Clayton, after I mentioned these two gentlemen's names, he said, "Well, they're waiting for me now; let me talk to them." [laughter] And they confirmed the fact that I had knowledge of the industry.

So he said, "How soon can you start to work for me?"

I said, "Mr. Clayton, I would like to come and be useful to the government, but I don't feel I can really leave my employers without giving them adequate notice."

He said, "Who do you report to?" And I gave him Mr. Schmutz's name. He said, "Do you mind if I call Mr. Schmutz?"

I said, "No, not at all."

So he called him up, and he said, "Mr. Schmutz, this is Will Clayton, the deputy federal loan administrator of the RFC. I'm working on the government's programs for procuring strategic materials, and I have in my office with me one of your employees, Simon Strauss. I think I need his background to help me in this program, and I'd like him to come to work as rapidly as possible." I think the date was the 26th or 27th of February. I started work on the 15th of March. Mr. Schmutz agreed.

Swent: So that was it.

Strauss: So that changed my life rapidly.

The Labor Union Picture

Swent: Drastically, yes. Before we go on to that, you haven't said anything about labor at that point. Were the unions a factor in your analysis of these various industries or companies?

Strauss: Well, naturally. At the time, the mining union was allegedly somewhat communist-infiltrated. Let me see if I can remember the name of it. It later became the Steelworkers, but before it became--oh, it was the Mine, Mill, and Smelter Workers Union. They were a rather radical group, and there were periodic labor disturbances.

Swent: I guess the Depression kept them subdued.

Strauss: But the Depression kept any strike to a limited extent. There had not been extended labor interruptions. And of course, once we got into war, which was ten months down the road, the whole picture changed dramatically.

Selective Service and Deferment

Strauss: Incidentally, of course, at this time, in late 1940, early 1941, Selective Service was already in effect. Everybody between eighteen and thirty-five years had to register. I had registered with my local Selective Service board. But because I was a father, I was not quite as likely to be drafted as people who did not have children or who didn't have family obligations. Very

shortly after that, the government did enact a regulation that people in the nonferrous metals business--not the precious metals, but the copper-lead-zinc-bauxite mining business, should be exempted from draft unless they volunteered to go, because of the need to maintain production in the domestic mines and smelters.

Swent: So you were considered in an essential capacity?

Strauss: Well, I wasn't working in the mines or smelters; I just mention that in connection with your question about labor.

Swent: Right. But this didn't affect--you were deferred, I presume?

Strauss: Once I started government service, I was immediately deferred, yes. I had a complete deferment.

Swent: You were also analyzing the industrial minerals; which one of these corporations did they come under?

Strauss: Metals Reserve. Anything metals or minerals was Metals Reserve. In fact, as the war developed, the list of materials that Metals Reserve got interested in was steadily expanded. In all, sixty-two different minerals, including the metals, were in the Metals Reserve program, including such nonmetallic ones as specifically industrial diamonds, graphite, quartz crystals, corundum, which is an abrasive material, ambligonite, which is a mineral used for the production of lithium. We went from aluminum and antimony and asbestos to zinc and zirconium, was the way I liked to put it. In fact, a year later--not a year later, but about ten months later, when my daughter was about to be born, and for a while we thought we might have twins, I suggested that we should call the twins Abaca and Zirconium, because that was as far as one could go with the alphabet. [laughter]

Swent: So you moved from New York to Washington with the new baby?

Strauss: In March, yes. Well, my wife didn't come down until the first of May. I finally found a house for her. I commuted weekends by train to New York to be with her. Air travel was limited. I shared, for those months of March and April, quarters of a very good friend, Mark McCloskey, whose daughter, Janet, I subsequently married. So I frequently tease my present wife, Janet, by saying that her father was my roommate before she was, and I haven't made up my mind which was the better roommate. [laughter] But I did share quarters with him. He was in Washington working on matters of troop morale under the leadership of Governor McNutt dealing with USO and other organizations of that kind.

Swent: And you had known him, he was a friend of Elaine, your first wife?

Strauss: Yes. He was a friend of my first wife's, and we were neighbors in Riverdale. We were very close friends.

So Washington was a heady place to come to in March of '41. We didn't know whether we were going to get into the war or not, but we had an awful lot of things to do. Right off, among the major programs I was immediately involved in with Mr. Clayton, who was a wonderful boss--

Vice President, Metals Reserve Company

Swent: What exactly was your title? What was your job?

Strauss: My first title was assistant to the deputy federal loan administrator, Mr. Clayton. Subsequently, I was designated an assistant vice president of Metals Reserve Company, and about six months later I was made vice president of Metals Reserve Company, so that I could sign contracts.

Buying and Selling Manganese and Chrome

Strauss: We were buying; we were also selling, because much of the material that we were purchasing was already beginning to be in fairly short supply. Two such commodities were manganese and chrome. The principal sources of manganese and chrome at that time were South Africa and the Soviet Union.

Swent: We don't produce any domestically.

Strauss: There was no production, but there were plans for producing from low-grade materials, and before the war was over, we produced some of each, both manganese and chrome. But the steel industry couldn't wait until we got these domestic things going. We had to be assured that they were supplied, and while the steel industry had normally procured directly from these sources, they were finding increasing difficulties in getting shipping space, because shipping space was at a premium. The German submarines were sinking cargo vessels at a very high rate. The steel companies actually preferred having the government do the buying.

We got more access to shipping space, better insurance rates. So it was a very active program.

The Texas City Tin Smelter

Strauss: The construction of the tin smelter in Texas City was under the aegis of the Defense Plant Corporation, but Metals Reserve Company had to start buying the raw materials to put in the plant when it would get into operation.

Swent: We had no domestic production of tin.

Strauss: There was a very small production in Alaska, a few tons a year. Nothing to speak of. There was also a limited production in Mexico. But the rest of the world's tin supply came either from Africa or, the most important source, Southeast Asia--Malaya, Thailand, and what is now Indonesia, then the Netherlands East Indies, or from Bolivia. Bolivia at that time was the only significant producer in Latin America.

The Bolivian ore had traditionally gone to Europe to be smelted, the reason being that the Bolivian ore contained lots of impurities, and the European smelters mixed the impure Bolivian concentrates with highgrade concentrates from Southeast Asia and Africa. The United States didn't have access to the highgrade concentrates. The Dutch owned the material coming from the East Indies; the British controlled the supply from Malaya and Nigeria; the Belgians controlled the supply from what was then the Belgian Congo, now Zaire. So they built smelters to treat this material, and we were in the position that we bought refined tin, not tin ore. We had no access, other than the material in Bolivia.

One of the things we started talking with the British about immediately was, with all of Europe under German domination, the Dutch could no longer use the material from the East Indies. We were building this smelter. We wanted to buy as much of the tin ore production from the East Indies as we could. We even persuaded the British that we should buy some of the Malayan material. Much of the Malayan material was smelted either in Singapore or Malaya; the balance had been smelted in England. But the risk of losing those concentrate imports to enemy action was very great, by shipping it into England. If we shipped it to the United States, it would be better. So we were busy buying this tin concentrate even though the smelter wasn't yet going.

Swent: Then was the anticipation that we would use the tin, or get it somehow to England?

Strauss: Yes. Well, we would use the tin, because we were the world's largest consumers of tin. We were having to import tin from Europe, from Singapore, or from England, as tin. Now we wanted to import enough of the highgrade concentrates to make the smelting of the Bolivian concentrates viable. We could not have run the tin smelter on 100 percent feed of the Bolivian ore because of the impurities; it would not have been possible to get good quality tin.

In all of this, we had the counsel and advice of the Dutch. A number of the Dutch engineers had gotten out of Holland before the fall of Holland. Others had been in the East Indies at the time. So the Billiton Company was asked to be the technical managers of the Texas City tin smelter, and they worked very closely and very well with the Metals Reserve Company and the Defense Plant Corporation in that regard throughout the war.

Unfortunately, looking at it in retrospect today, because so much of the feed was still the impure material from Bolivia containing undesirable products like antimony, bismuth, and even some tungsten and cadmium, the waste slag from the tin smelter, because there were no facilities to recover these impurities originally, resulted in some contamination of the waters of Galveston Bay. But under the pressure of wartime needs, the environmental considerations were not even looked at, I think, at the time.

Swent: People didn't even think of it then, did they?

Strauss: No, they did not. But in the long run, the shrimp fishermen who harvested the shrimp crops in that area were very upset about toxic elements. Holding ponds were built into which to dump this material, but there still were occasions when weather conditions resulted in some of this material escaping into the bay. But the Texas City tin smelter was a big project.

Expanding Aluminum Production

Strauss: Another one was expansion of aluminum production. President Roosevelt had set a target that this country had to build 25,000 war planes a year. He thought anything less than that would be inadequate, and in fact, that goal was considerably exceeded during the war. But since aluminum was the principal raw

material used in the construction of airplanes, it was clear that the aluminum industry, which prior to World War II was really a very small industry--we know now that aluminum consumption is almost twice that of copper. In those days, aluminum consumption was a quarter of the consumption of copper.

Swent: And the airplane production was very small.

Strauss: Very limited.

Swent: We really started from zero.

Strauss: That's right. So we had to gear up aluminum production, and much of the expansion of aluminum production occurred in the United States. The plants were built by Aluminum Company of America for Defense Plant Corporation, with Defense Plant Corporation money. But because of the Justice Department's concern about Alcoa's monopoly position, the operation of these plants was not entrusted to Alcoa, even though they designed and built the plants.

The operation was turned over to two other companies: Reynolds Metals, which was a major aluminum consumer; and Kaiser, which had been formed by the famous Henry Kaiser, who had shown his talent for organization in managing almost anything. Kaiser formed what later became the Kaiser Aluminum Company. They ran the new plants built in the United States, many of them in the Pacific Northwest, where they took advantage of cheap electric power from Bonneville and Grand Coulee. Some plants were built in the Gulf area. So the operators became Reynolds and Kaiser.

And after the war had ended and the government disposed of these plants, that was the basis of Kaiser and Reynolds becoming important aluminum producers. A, they had run the plants during the war, and b, they were able to buy the plants which they knew so well.

Swent: And Alcoa was left--

Strauss: Well, Alcoa had expanded its own plants considerably. But Alcoa no longer had what appeared to be a monopoly of the aluminum business.

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Strauss: However, in addition to this expansion of domestic production, there was a lot of electric power available in Quebec. The Aluminum Company of Canada, which had been split off from Alcoa, presented a project for expanding their aluminum capacity very

considerably, including the construction of a big power plant in a place called Shipshaw. Defense Plant Corporation was not empowered to build plants outside the United States. So, to achieve the expansion in Canada--Alcan was already supplying the British with all the aluminum they thought they needed--but to supply more metal to the U.S. market, Alcan needed to expand. But Defense Plant couldn't build the plants.

Alcan said they would be glad to expand, but they didn't have the money. We worked out an ingenious arrangement under which Metals Reserve Company negotiated an agreement to buy 1,700,000,000 pounds of aluminum, I'm sure the largest contract for a nonferrous metal ever negotiated up to that time. And Metals Reserve Company agreed to advance five cents a pound, or $85 million, which was the money that Alcan needed to complete the expansion program.

Swent: It was just an advance on a purchase?

Strauss: That's right. So it was a purchase with a down payment in advance for the materials to be delivered at some future date.

When we came to negotiating the price, there was a serious obstacle, which was that the aluminum would have to be produced from bauxite imported from British Guyana, where Alcan had mines that could supply the additional bauxite. No question about that. But freight rates, and in particular, war risk insurance rates, were constantly changing. So we had to negotiate a very complex escalator clause. My recollection is that the basic price was fifteen cents a pound for the aluminum. We had advanced five cents a pound, so we would owe at least ten cents a pound when the aluminum was delivered. But under the terms of the contract, if the freight rates and the war risk insurance increased, the price would be increased to cover the escalation of those costs. And it was very difficult to write an appropriate clause.

Swent: Who shipped these? Who was getting the freight money? Were they shipped in private--

Strauss: Yes, by private shipping lines. But of course, their costs of doing business were expanding enormously, and they had to insure their ships just as Alcan had to insure the bauxite. So nobody knew what the future was going to hold.

Swent: You had no control over those things.

Strauss: And in fact, once we got in the war, the rates went through the roof. In the year 1942, the first full year we were in the war,

25 percent of all the [shipping] bottoms coming to the United States from the Guyanas were sunk by submarines in the Caribbean. One out of every four ships.

Swent: We forget so soon how awful it was.

Strauss: It was terrible. And you had to deal with all of these contingencies. So that was a major contract that Mr. Clayton had me immediately working on. I had lawyers to negotiate with. Here I had never bought a pound of aluminum in my life, and I was about to negotiate the largest contract ever made for the purchase of any nonferrous metal.

Flake Graphite and Amber Mica from Madagascar: International Drama

Strauss: Another deal that I've described in some detail in a paper I presented at the Mining History Association conference in June, 1994,[1] was the importation of mica and graphite from Madagascar, and I won't repeat all of that. But the essence of it was that Madagascar had opted to become a colony loyal to Vichy France. The British were scared stiff that Vichy would permit Madagascar to be used as a refueling base for German submarines operating in the Indian Ocean. That would threaten all of the imports the British were getting from Australia, from India, and many of their imports from South Africa, the three principal sources of British raw materials, other than Canada. They couldn't contemplate that.

So, in spite of the fact that with the fall of France, the British navy was strung very tight, they spared enough naval craft to maintain a complete embargo on all shipping in and out of the island of Madagascar, which is several hundred miles long, parallel to the east coast of Africa. It was a major undertaking, but from June of 1940 until after Pearl Harbor, the British navy refused access to Madagascar to any shipping, other than one single freighter which was permitted to trade between Madagascar and what was then called French Indochina, now Vietnam.

That not only caused a cessation of imports into Madagascar, it also prevented exports. Madagascar is the source of two unique materials which American industry felt they had to have. One was flake graphite, and the other was amber mica, sometimes called phlogopite.

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[1]See Appendix B.

Swent: What were these used for?

Strauss: The amber mica was used by General Electric and other major electrical producers of highly sensitive electrical equipment for various insulation purposes. It was considered far superior to the other type of mica, which is much more common, which is the clear mica, the white mica. The graphite was used by the manufacturers of crucibles used in the metals industry for pouring molten metal. Apparently, Madagascar flake graphite adhered to the lining of the vessels better and provided better insulation.

So there was a big premium put on getting access to Madagascar graphite and mica, and Mr. Clayton, with the help of the State Department, negotiated an agreement with the British to let one American vessel through the blockade to pick up graphite and mica. The French insisted that they had to have supplies in response. Well, the negotiation of these agreements took a lot of time. I was involved indirectly at start, but once an agreement had been reached, the actual administration, the arrangements for the shipping line and so on, were entrusted in part to me.

I got to know all of the players involved. We succeeded in getting a vessel in in June of 1941, the first American ship in a year to call at Madagascar. It loaded some of the graphite, but President Roosevelt, without thinking about graphite and mica, decided to intern all French shipping in U.S. ports. We were terribly concerned that our ship, the *Lone Star*, would be interned, so we had to call it home under the bizarre circumstances related in my paper. We had got none of the mica.

So then we started all over again, and this time, the French were much harder to deal with, but we finally reached an agreement under which we would put a second American ship into Madagascar and the French would divert a freighter from Indochina into Manila, and there would be simultaneous loading of the two vessels. The French would be loading the supplies they needed in Manila while we would be loading the supplies we needed in Madagascar. There would be consular officials on board--a U.S. official on the French vessel, a French official on the U.S. vessel.

They exchanged cables at the end of November, 1941. The loading began on the first of December. On the 8th of December, the first ship sunk by the Japanese bombardment of Manila Harbor was the French ship, but in spite of that, the French permitted--they recognized we weren't responsible--they permitted the

American ship to complete its loading, and we got the graphite and mica out.

So that was illustrative of the kind of problems we were running into. We were working terribly hard, twelve hours a day minimum, most weeks seven days a week.

Swent: Where were you working? What building?

Strauss: A building called the Lafayette Building, which faces Lafayette Square on Vermont Avenue in Washington, two blocks from the White House.

Swent: Is it still there?

Strauss: It is still there. It is now the building used by the Export-Import Bank. The Export-Import Bank was in the building then, but it only had two or three floors. The RFC had the balance of the building. A very pleasant place to work, and right close to the people that we needed to see at the State Department, which was then in the old Army-Navy Building, so-called, next to the White House. We were close to the Treasury. The War Production Board was a little further downtown.

Washington in Wartime

Strauss: One of the things that was extraordinary about working in Washington in wartime, as far as I was concerned, was the excellence of the relationships between the various departments. We had a common goal. There was none of the bickering and turf-building problems that I see in Washington today. I shouldn't say there was none; I observed none. Maybe there was some somewhere else that I wasn't aware of. The War Production Board's mandate was to see that the munitions, weapons, and essential civilian products went forward. Once we were in the war, they allocated everything that was consumed in the form of strategic materials.

Metals Reserve Company was their business agent. We had the stockpiles of the materials, we saw that the people that they said should get copper or corundum or zirconium or whatever got the material. The Office of Price Administration decided the prices. We didn't negotiate prices.

A Bizarre Episode with Block Talc

Strauss: One of the most bizarre episodes of the war came out of this fact that we adhered so strictly to the mandates of the Office of Price Administration. Block talc was considered a strategic material because it was used in the radio and electronics industries, but it's also used in the production of talcum powder. The best quality talc comes from the island of Sardinia, part of Italy. Obviously, we had no access to that until after Sardinia was occupied by our forces, which I think occurred in late 1943.

Suddenly, block talc became available, and Metals Reserve Company succeeded in securing supplies of block talc, brought them in, and we said to the War Production Board, "We've got X tons of block talc; to whom shall we distribute it?" They drew up a list of allocations for us. One of the leading cosmetic companies was among those to receive it. The contract was sent out to them, so many tons of block talc at whatever the price was. My offhand recollection was it was around seventy dollars a metric ton.

I got a call from the purchasing manager: could he come and see me? I said, "Of course."

When he came, he said, "About our contract: I'd like to pay you an extra ten dollars."

I said, "That's not legal. The Office of Price Administration says we have to charge this price, and only this price. Why would you want to pay an extra ten dollars?"

He said, "Our advertising says that we use the highest priced raw materials. I want truth in advertising." [laughter] Ten dollars a ton for talcum powder selling at several dollars for a seven-ounce can. Obviously, it made no difference to them what price they paid for it. They wanted to be truthful in advertising. And that shows how government regulation and interposition into the ordinary tides of commerce raises all kinds of amusing and unexpected results.

Personalities and Philosophies Influence Decisions

Swent: I was thinking that you or somebody must have been under pressure on some of these decisions, for instance, to cut Alcoa out of

operating; there were decisions made along the way here that were partly political, I would assume.

Strauss: Yes, sure.

Swent: Where to locate the tin smelter, for instance. Were there lobbyists and--?

Strauss: If so, they never got to me.

Swent: But there must have been tremendous pressures in certain--

Strauss: The people who made the decisions were basically the War Production Board. The Metals Reserve Company could advise what it thought was desirable. The Army-Navy Munitions Board would tell us where they wanted these materials stockpiled. The question that you first raised about Alcoa, that operating--I think the Justice Department just said this to the Defense Plant Corporation, "You cannot have Aluminum Company of America as the operator of this plant. We have had them on the carpet for years as a monopoly. It's all right to let them help you to build the plant so that it's an efficient operation, but you've got to find somebody else to run it."

Henry Wallace and Jesse Jones, Incompatible

Strauss: One of the things that happened as the war went on, after Pearl Harbor, was that a big conflict developed between Vice President [Henry] Wallace, who was a liberal and very interested in human rights issues and things of that sort, and Jesse Jones, who was a down-to-earth banker type, who was really the force behind not only the Department of Commerce, of which he was secretary, but the Reconstruction Finance Corporation, which he had headed for a long period of time. And they didn't like each other.

Henry Wallace put so much pressure on President Roosevelt that something called the Foreign Economic Administration was formed, and then later it became the Board of Economic Warfare [BEW], headed by Mr. Wallace or by some of his friends. They were to monitor all MRC contracts to make sure that we were protecting the rights of the Bolivian workers when we bought Bolivian tin ores, or other standards that they had as to what was appropriate behavior.

Scrutinizing for Democratic Ideals

Strauss: The BEW had as the head of its mineral operations Dr. Alan Bateman, who was a well known professor at Yale, a geologist. In addition, they had a chap named Morris Rosenthal who came out of a New York trading outfit who was a sort of philosopher-general. And a chap named Paul Nietze, who later became very well known in Washington in the Defense Department and in negotiations with the Russians. These three gentlemen were scrutinizing everything we did as to whether it was consistent with democratic ideals, human rights, et cetera.

An individual lawyer was assigned to come over each day and read all of our correspondence, and read every contract that we were signing. The lawyer that was assigned to monitor my activities for quite a few months, later was switched to somebody else, was a man named Willard Wirtz. Willard became secretary of Labor in the Kennedy administration. We were fast friends. He never changed a word in any letter I wrote, not once. We understood each other very well.

At the top, between Wallace and Jones and some of the other chief people, there was a good deal of rivalry. Down the line, we worked very well together, but to be quite frank, I think this duplication of effort tended to delay things, use manpower, require excessive initialing of everything. But we struggled through it. It worked.

One of the things that I'm proudest about my association with Metals Reserve Company, I have never heard anybody allege that anything we did was improper, that there was any corruption, that anybody was favored. We didn't have too much scope to favor people. The War Production Board told us who to sell to, and the Office of Price Administration told us what to sell for. On the buying side, of course, we had to use our negotiation skills to buy as cheaply as possible.

Swent: Had you wanted to, there probably would have been room for--

Strauss: There might have been. But we didn't look at it. We had an exceptional group of able people, and I mentioned some of them in our private conversation before, at Metals Reserve Company. Our morale was very high, and we got the materials. There was never a time when a defense plant was shut down for lack of raw materials, that I know of, during the whole war, and it took a lot of doing.

And there were some unusual examples of outstanding integrity. Let me mention one. Before Pearl Harbor, there was great concern on the part of the British about a possible leakage of industrial diamonds out of Brazil to Germany. Industrial diamonds are very essential for the drawing of fine wire and other purposes. They're the hardest material used by man. So the British were anxious to make sure that the Germans didn't get diamonds. Of course, the British knew the Germans couldn't get diamonds from South Africa or from the Belgian Congo at the time; that was out of the question. But Brazil in 1941 was not a combatant, and while the Brazilians were probably favorable to the Allied cause, there was nothing to prevent the Germans from buying diamonds in Brazil, shipping them out by diplomatic pouch. German submarines regularly came into Rio Harbor. In fact, I think there have been some movies about that. But they regularly came into Rio Harbor to pick up messages, and it was easy for the embassy to get diamonds out.

Protecting Brazilian Diamond Supplies

Strauss: So at the request of the British, Metals Reserve Company early in 1941 negotiated a bilateral agreement with the Brazilians covering a number of materials--quartz crystals was one, and industrial diamonds was another, and there were several others. But I recall particularly the diamond purchase, because we wound up--we asked the Brazilians what they thought their total output of diamonds would be, not just industrial diamonds but all diamonds, and they estimated 600,000 carats. We agreed to pay a price of twenty dollars a carat, which we felt at the time was above the market, so that they would have an incentive to honor their agreement. So we bought the 600,000 carats for $12 million. It was shipped to the United States, and was in the stockpile.

Ike Hirsch, an Honest Patriot

Strauss: About 1943 or 1944 when the Brazilians had joined the Allies, it was clear we didn't need to do any further preclusive buying, as it was called. The diamond dealer who had been advising us--his name was Ike Hirsch--came to me and he said, "You know that 600,000 carats that we bought in 1941. I think there were quite a few items in there that are of gem quality. If you would allow me to sort it out, I think the government could sell the gem

quality," (which had no price ceilings on it), "in the open market, and we could get our $12 million back." I discussed the matter with the War Production Board; they saw no objection to it. The supply of diamonds was quite adequate.

So Mr. Hirsch went to work and made up parcels of what he thought were gem quality diamonds. He auctioned them off. The government realized $20 million selling one-third of the diamonds. We had 400,000 carats of diamonds left, and we had made $8 million against the cost of our total original purchase.

Nobody in the government could be paid enough money to be an honest diamond appraiser. You couldn't! I mean, and certainly none of us on the staff at Metals Reserve could appraise those diamonds. Mr. Hirsch, if he had wanted to, could have sorted the diamonds in some way, tipped off his friends to bid for item C or item G, but he made an $8 million profit for the government in the middle of the war by making his appraisal. It was an extraordinary episode.

Swent: Where physically did you keep these kinds of things?

Strauss: Diamonds were kept in the treasury vaults.

Swent: I see. And the stockpiles--

Strauss: Most of the stockpiles were in military establishments, barracks or whatever. The really bulk commodities, manganese and chrome, for instance, were largely stored at the Camden Yards in Baltimore, because Baltimore provided the shortest rail haul into the Pittsburgh and Cleveland steel plants; there was ample room there, the B&O had lots of room.

Swent: Were they just in box cars, just left in the box cars?

Strauss: No, the material was dumped on the ground. We couldn't afford to tie up the box cars. We're talking millions of tons that was stored on the ground. Some of it is still there.

Swent: But wouldn't it wash away in the rain?

Strauss: No, there were retaining boards. Most of it was lumpy material, wasn't fines. Some of it would blow away over time, yes. Most of the metals were stored indoors, but in mammoth warehouses, mostly on military grounds.

The Combined Raw Materials Board

Swent: And how did you meet with these people? You mentioned that the Dutch were here, but the English, the Brazilians--were you communicating by phone, by letter; did people come?

Strauss: We negotiated the Brazilian bilateral agreement by talking with the Brazilian ambassador, who communicated with his government by cable. He actually carried out the negotiation. The negotiations on the Madagascar mica and graphite, the British had a Ministry of Supply group in Washington. They were some very able people. There was a fellow named Clive Baillieu who later became a high official in the government, in the cabinet. Clive Baillieu was in charge of that office. He was the British head of something called the Combined Raw Materials Board. And William L. Batt, the retired head of Timken Roller Bearing, was the U.S. head of the Combined Raw Materials Board.

We had regular meetings in which we discussed common issues of supplies of raw materials, to make sure that both countries were dealt with equitably. On quartz crystals, for instance, most of which originated in Brazil, the British agreed that if both countries were down there buying, we'd just bid the prices up against each other. They agreed the U.S. should do all the buying, and then allocate from the materials we bought according to the requirements of the two countries.

The British raw materials controller was Ronald Prain. It was when he came over to Washington to discuss some of the issues of allocation of raw materials that I suddenly discovered that he and I had gone to the same school in Valparaiso. But there were not too many--

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Swent: You were just beginning to mention a negotiation which you made with Mexico.

Strauss: Yes. Now, there was an agreement made with the Mexicans covering all their minerals, and that was negotiated in Mexico City. We sent a member of the Douglas family, Walter Douglas--it wasn't Lewis Douglas, who was ambassador to England. Walter Douglas, who was coached by Mr. Clayton and by the staffs of the RFC companies. He went to Mexico City and negotiated the agreement. Alan Bateman on behalf of FEA [Foreign Economic Administration] sat at his right hand. They negotiated an agreement face to face. But in most cases, the agreements were negotiated in Washington by the representatives of the countries.

Pearl Harbor Day, December 7, 1941

Swent: Would you like to just recall December 7?

Strauss: Yes. My daughter Susan had been born in New York on November 18, 1941. She was born in New York because there had been some problems in the Washington hospitals, and our doctor in Washington advised us that it would be better if Elaine had the baby in a New York hospital.

Swent: And you thought it might be twins.

Strauss: Yes. But it wasn't; it was a very nice little girl. A close friend of Elaine's family was the head of the obstetrical services at the Brooklyn Jewish Hospital in Brooklyn, so that's where Elaine went to have the baby. And for about a month, she wanted to stay in New York. She was living with her parents in their comfortable apartment. A good friend of hers was scheduled to be married on December 21, so she wanted to stay in New York until after this wedding. She wanted to attend the wedding, understandably.

So on Sunday, December 7, I had come up from Washington to spend the weekend with her and with my children at my in-laws' apartment. I decided to go across town, from Park Avenue, where my in-laws had their apartment, to West End Avenue, where my Aunt Amy was living, because I was anxious to see my aunt and uncle. I hadn't seen them in a long time.

After having a visit with them that Sunday morning, I got on the bus, and there was somebody on the bus that had the radio going. The radio said, "The Japanese have attacked Pearl Harbor." That's how I knew, of course. I had planned to return to Washington on Monday, but instead of that, I decided I had better go back immediately.

My brother-in-law, Elaine's brother, who was in officers' candidate school at Fort Belvoir in Virginia, had also come up that weekend to see his new niece. He and I traveled back together. Here he was, a costume jewelry salesman who had been inducted into the armed services and was now going to be an engineer, [laughs] suddenly faced with the reality that he might very well be going overseas, and in fact he did. He went overseas very shortly thereafter. He was in the North African landings. He went all through the campaign in Italy. He then went to England. He landed in Normandy a week after the Normandy invasion. He was wounded slightly when his truck went over a

buried mine on the roads of France, and he came back after V-E Day. So he saw the whole war.

Ban on Imports of Strategic Critical Materials

Strauss: But it was really frantic in Washington those days in December. One of the first things that Mr. Roosevelt decided, and it was a very wise decision: no strategic critical materials were to be imported by private industry after the first of January. All imports had to be through the RFC agencies. Metals and minerals through Metals Reserve; the strategic critical materials other than metals and minerals either through Rubber Reserve or Defense Supplies Corporation.

Swent: Why was that?

Strauss: Because he wanted to end competitive bidding for materials by American consumers abroad, so they could not buy and ship to themselves. There might have been somebody who was tempted to say, "Well, if I can buy some extra zinc in Mexico, it will supplement my allocation from the War Production Board." The customs houses were notified. Strategic minerals had to be shipped to the Metals Reserve Company, Defense Supplies Corporation, or Rubber Reserve. That put an end to what might have been a lot of black marketing, probably. I think it was an extremely wise decision.

It meant the volume of work we did was enormously expanded, of course. But it also meant that the War Production Board knew when it made an allocation that the material was there and available.

The Premium Price Plan and Committee; Plato Malozemoff et al.

Strauss: One of the other interesting things that happened during the war was the famous Premium Price Plan, of which I'm sure you heard something from Mr. [Plato] Malozemoff when you interviewed him.[1]

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[1]Plato Malozemoff, *A Life in Mining: Siberia to Chairman of Newmont Mining Corporation, 1909-1985*, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1990.

Swent: A little bit, yes, but please--

Strauss: Well, the problem was as follows: the OPA said the price of copper was to be twelve cents a pound; the price of zinc was to be eight and a quarter cents a pound; and the price of lead was to be six and a half cents a pound. That was the most you could charge. If you chose to charge less, okay, but that was the most. At the time of Pearl Harbor, the prices seemed adequate for the maintenance of domestic production of these three metals, particularly since the deferment of labor working in the mines meant that they should have reasonably adequate labor sources. Then later, the controversial measure closing down the gold mines came along on the theory that those miners would go to work in the base metal mines. I won't enter into the pros and cons of that, because that's a very lengthy debate.

And theoretically, everything else was price controlled. But mines wear out. Highgrade ore bodies drop out. Companies that had cut back in order to be able to live through the terrible Depression on their exploration and development work began to run out of ores that were developed. And it was clear that domestic production of these three metals would start to drop unless some way was found to provide a little additional revenue to those mines that needed it.

So the Premium Price Plan provided, as I recall it, up to five cents a pound extra for copper, and up to two and three quarters cents a pound extra for lead and zinc at these mines, where government engineers would certify that costs were in excess of the price ceilings. The premiums were not paid for all production; far from it. Much of the production went on without any subsidy. The mines that did receive the premiums had to submit a monthly statement of expenditures and revenues, which was audited by the government.

The actual implementation of this complex arrangement was given to an interagency group, the Premium Price Committee, on which Metals Reserve, which paid out the money, War Production Board, and Office of Price Administration were represented. Metals Reserve's representative on the Premium Price Plan was DeWitt Smith. I believe that Howard Young was the War Production Board representative, and Plato Malozemoff was the Office of Price Administration's representative.

Of course, these gentlemen couldn't always be present at every meeting, because there were meetings almost daily. So there were various alternates, and I was Mr. Smith's alternate delegate to go to these sessions. And it was very interesting. We went over the figures carefully, we had orders to--

Swent: Was that where you first met Plato?

Strauss: That was where I first met Plato Malozemoff. The other two gentlemen I had known previously, but that was when I first met Plato.

Swent: That was a pretty high-powered group.

Strauss: Yes. And we spent a lot of money. But the object was achieved; production was maintained.

Swent: Were new mines brought in as a result of this?

Strauss: No new mines were started. No, this was to keep existing mines going. There were special contracts made for some new mines. I recall particularly I negotiated an agreement with Newmont for a small copper mine in California called the Gray Eagle, but it didn't survive very long after the war. I negotiated that not with Fred Searls but with his brother, Carroll Searls. Do you know about Carroll Searls?

Swent: Well, I've heard the name.

Strauss: Yes. And A. J. McNab. They were the Newmont representatives who came to negotiate that agreement.

Swent: Why do I think that the Resurrection Mine had something to with that?

Strauss: It may have been. I didn't negotiate that agreement. Dave Irwin may have negotiated that. I just can't say. We had so many contracts, we couldn't know all of them.

Meeting Influential People; the Marching & Chowder Club

Swent: Yes, I'm sure. Were you working at all with Jim Boyd?[1]

Strauss: Yes. Of course, Jim Boyd was overseas during the latter part of the war, but I met Jim when he was in the copper division working with a fellow named John Church. Then Boyd went into the Army-

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[1]James Boyd, *Minerals and Critical Materials Management: Military and Government Administrator and Mining Executive, 1941-1987*, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1988.

Navy Munitions Board and became a colonel, and I knew him well. John Gustafson, who we mentioned before, came to Metals Reserve, and his specialty was in dealing with the contracts on fluorspars. Hugh McKinstry was in the Board of Economic Warfare. That's where I met him earlier.

Swent: It must have been an exciting time.

Strauss: Exciting time, and a lot of people, because of course, there was very little for them to do at their home offices. A lot of the things that they would have normally been doing had been taken over by the government, so it was natural for them to come and work at the government. There was a wonderful spirit of camaraderie. At Metals Reserve Company, we used to have lunch with people from the other agencies or with people from industry who came to Washington from time to time. But every Friday, Metals Reserve people would have lunch together at the Carlton Hotel--it's now the Sheraton Carlton--in the Grill Room. They had a wonderful lunch for seventy-five cents. [laughs] Which we all enjoyed. We called ourselves the Marching and Chowder Club. It was just a very enjoyable interlude in the midst of very hard work.

And many of us, I particularly because of my age, felt the occasional twinge of guilt that my contemporaries, like my brother-in-law, were over there risking their lives, and I was having a lot of hard work and a lot of responsibility, but at the same time, an unparalleled education. I had Mr. Clayton for a teacher; there was none better.

Preparing for Postwar Work

Swent: Was there a time at which you sort of saw that things were--that you had reached the top and things were organized, and the war was being won, and it was getting better?

Strauss: That was clear by the end of '44, before V-E Day. Many of the programs began to wind down. It was clear, for example, that we had all the aluminum that we wanted, and there were some cutbacks made on aluminum production in the United States because of that. This is partially in answer to a question you asked earlier: we did not cut back the program with the Aluminum Company of Canada, because we hadn't gotten our five cents back on that. [laughs] So we allowed that contract to run on.

That caused some querying on the part of the senators from Oregon and Washington. I remember Senator [Warren] Magnusson was just new on the scene. There were hearings held; I had to testify as to the details of the Alcan contract, and why we felt we should continue to perform that, even though production in Washington and Oregon was being somewhat reduced.

Many fewer new contracts were being made. But it was clear that some of us had to hang around to tidy up, even after the war ended. So I didn't have a company to go back to--oh, I'm sure Standard Statistics would have offered me my job, but after my experience I'd had in Washington, I didn't think I wanted to be a securities analyst any longer. And a lot of people were dropping hints about, "When you're ready to leave Washington, be sure to talk to us." So I had a list of companies to talk to, including American Smelting and Refining Company. By the middle of 1945, before V-J Day but after V-E Day, they had actually approached me about coming to work for them.

Swent: It was a time for making lots of wonderful contacts, too, wasn't it?

Strauss: Oh, it was. I had met everybody in the industry. The St. Joe Lead Company--Drew Fletcher, who was then treasurer, later became the president, was a very good friend of mine. He was very anxious for me to come to work for him, and I was tempted, because I liked Mr. Fletcher very much. The famous metals and ores trader, Mauricio Hochschild--does that name mean anything to you?

Swent: I've heard it, yes.

Strauss: Yes. With whom I'd had a lot of contacts in connection with tin, tungsten, and so on, he was anxious for me to join him. And he was a good friend, and I had known him since I was a boy in South America. He was a friend of my father's. But his methods of doing business were not--were a little different, let's say, than mine. He was a very shrewd, hard trader, and I didn't feel I would be happy there, although we became very good friends and remained very good friends. So that was clear.

But one thing--Mr. Clayton, I should say, by this time had left the RFC and he was by now assistant secretary of state, working on problems like--he was the delegate at the famous Bretton Woods Conference, working on post-war monetary problems. But he made it clear to me in his capacity as assistant secretary of state that once the war was ended, he did want me to go to England to tidy up a lot of the contracts that we had had with people in the Empire, and that asking them to come to Washington

would put us in a poorer negotiating position than if I went over to talk to them over there. So I knew that I had that assignment ahead of me.

So I tentatively figured the end of 1945 was when I would leave.

Swent: Did you consider remaining in government service at all?

Strauss: My wife was very anxious for me to switch over to the State Department. She was sure that Mr. Clayton would want me to work in his economics group. And it was tempting. There were people who suggested I would make a good ambassador to Peru or Chile, if there was a job. But I felt that I wanted a future in private industry.

So I made this tentative agreement to go to work for American Smelting and Refining Company.

Swent: You did make the trip to England?

Strauss: After I had already agreed to go to Asarco, but only as of January 1, 1946. I made the trip to England in September of '45. Mostly in connection with Indian mica, which had been a big problem for us. We had a lot of Indians who couldn't understand why we still didn't want to take delivery of mica that we no longer needed.

Swent: So you were trying to sort of close off some of your contracts?

Strauss: Yes, that's right. Not to be unfair, but to wind up contracts that had been negotiated. Nobody knew when the war was going to end.

Elaine Contracts Polio and Life Changes

Swent: Yes. Perhaps you might want to mention Elaine's polio. You were in Europe at that point.

Strauss: I was in England, on that trip to England--

Swent: Was that that same trip?

Strauss: Yes. I left New York on the 18th of September. I should say first that that summer, after V-E Day--

Swent: That must have been an exciting day.

Strauss: That was a very exciting day, particularly for our British colleagues. We went up, a group of us, from Washington, the War Production Board, Mr. Batt, Mr. Baillieu, and others, we went up to Alcan just before V-E Day to see the plant at Shipshaw that we had contracted for. I had made an interesting trip in April of '45 to Cuba to visit the Nicaro nickel operations, because Freeport was operating that property. This was a contract Mr. Clayton had negotiated directly with the Freeport Sulphur people. We built the first plant for treating lateritic nickel ores in Cuba.

And as was the case with the Shipshaw, Defense Plant Corporation couldn't own a plant in Cuba. So there was a very complicated deal which Mr. Clayton had originally negotiated with Freeport. They were going to produce nickel oxide, not nickel metal. The steel industry was reluctant to consume nickel oxide. They had never used it. Since then, they've learned how to use it quite well. But they couldn't understand why the government wouldn't go to the expense of converting the oxide into metal. First of all, it would have taken time; second, it would have required additional investment, and we decided that we had to force nickel oxide down their throats.

But anyway, the Nicaro people thought I ought to come to Cuba and see the operation before talking with the steel industry, so I did. That was an interesting experience, the only time I've ever been in Cuba.

But this is a bit of a digression. What I really started to say was in the summer of '45, the war in Europe being at an end; the war in Japan, which seemed to be going pretty well, Elaine and the two children went up to the Berkshires. They stayed at Great Barrington, which is not far from here, at a little resort called Tahone, and they had a wonderful summer there. I came up the weekend of V-J Day, so we had our celebration here in the Berkshires. It was a day or two after the airplane ran into the Empire State Building--you remember that accident?

Swent: Yes--I had forgotten that.

Strauss: And one of the people who were at this resort worked in the Empire State Building, and was still shaking with the thought of it, although she wasn't in the building when the accident occurred. But the dramatic effect of that was enormous.

So Elaine had a wonderful summer there and was very active, a lot of swimming, a lot of canoeing. The two children were

three and five, and seemed to be thriving. They came back. On the way back, Elaine spent a couple of days with her mother in New York, and started looking at housing. She went out to New Jersey to look at a place where a friend of ours had a home in one of the suburbs, to see how she would take to the suburban living. She had made up her mind she wanted to live in the suburbs post-war, and not in an apartment which her mother had considered was the only suitable way to live. Because when we were in Washington, she'd enjoyed having a garden and space for the children to run around, and she decided that's what we should do.

So she came back to Washington in early September. We had our ninth anniversary. She seemed to be fine. I remember we bought a bushel basket of peaches, and she was busy cooking those during the two or three days before I left on the 18th of September to go to England for these negotiations. She was disappointed she couldn't go with me--obviously she couldn't; the children were too small, and we had nobody to leave them with. So I expected to be gone two and a half weeks.

Mails were dreadful in those days. So we understood that we weren't going to communicate. I promised I'd keep a record of everything I did so that I could tell her what had happened. And off I went. I had two and a half very busy weeks--well, three weeks--in London. Saw a great many people, many of whom I had met during the war on and off in one capacity or another.

Then on Friday, I was ready to come back. In those days, you had to take a DC-3, only the British called them Dakotas, from London to Ireland, and then in Ireland you got on the amphibian Clippers which flew from Shannon to New York.

Swent: Didn't stop at Gander?

Strauss: We stopped not only at Gander, we stopped usually in New Brunswick, as well, and sometimes in Iceland.

The trip from London to Shannon was unexceptional. We arrived; we were put up in a very nice place in the little town of Adare. And suddenly, the Pan Am representative met with us and said, "I have bad news. There is a gale on the Atlantic. Tonight's flight will have to contend with icing. We can't possibly take everybody that's booked. We're going to have to leave some of you behind, and you will remain here until we have a flight for you." Well, that was a disappointment. I had the priority rating of a colonel; only generals made it. So I was among the group left behind. They were mostly government

service, military people, and two or three businessmen, but very few.

The next two days we spent in Ireland, sightseeing. We had a very good time. There was a diamond dealer from Antwerp whom I had met casually in Washington who was a crackerjack bridge player. There was another fellow in the soft commodities who worked for Defense Supplies, and I forget who the fourth was. We played endless rubbers of bridge.

Finally, we were told on Monday that we would leave, and we did. It was an overnight flight, and we arrived in La Guardia Tuesday morning, having stopped in Gander and I think also in St. Johns, New Brunswick, on the way. I was met by my brother-in-law with the news that Elaine was in the hospital in Washington with polio, that they had tried to get hold of me. Fortunately they hadn't, because I would have just worried and been unable to do anything. They had an American Airlines flight to Washington standing by, so I was rushed through Customs and Immigration and put on the flight to Washington.

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Strauss: When I got to Washington, two of our friends were there to meet me. They took me directly to the hospital. The doctors had said--in fact, my brother-in-law had said that there was only a fifty-fifty chance that she would survive, and that perhaps if she saw me, it might help. So they put me in a mask and gown. I don't know that she saw me or knew me. She was really out of it. She was stretched out on this gurney, and she had all kinds of needles stuck into her. Her head was shaking. I spoke to her. I thought I saw a flicker of recognition, but I'm not sure. She would have had trouble anyway--her eyes were affected--distinguishing me, because I had to have a mask on. Then I went home.

My mother and sister were with my children in our house in Chevy Chase. Everything was done that could be done, I think, under what was known then about polio. My colleagues in Metals Reserve were very cooperative. They contributed--

[tape interruption]

Strauss: --quarts of blood, because she needed enormous transfusions. I was shuttled back and forth from the office to the hospital two and three times a day. She was on intravenous for a long time--hot packs, cold packs, all kinds of treatment. But she had no use of any of her four limbs. She really lost the use of her eyes to a considerable extent. She could barely move her head;

that was about the only muscular function that she had. But she could breathe. The doctors were very unsure what would happen.

A Mr. Bransome, who was the head of the Vanadium Corporation of America, called me as soon as he knew I was back, wanted to know what he could do to help--anything. Mr. Clayton had indicated that if I needed help--. [voice breaks with emotion; long pause]

Swent: Those are the times when your friends really come through, aren't they?

Strauss: [with emotion] And that if I needed help, I should let him know. Well, I said to him, "Mr. Bransome, there's a doctor, Dr. Stinson, Philip Stinson." He was the brother of the Stinson who was secretary of war, and he was supposed to be the polio expert. So I said to him, "Well, if he could come down, I'm sure the doctors would appreciate his looking at Elaine and seeing what should be done."

Mr. Clayton arranged for a government plane to bring Stinson down. Stinson said he could come down, but it had to be just one evening. He had to fly back the same evening, so he was flown down. I met him at the army airport, not at the commercial airport. He went to the hospital and spent about an hour looking at Elaine, talking to her doctor. He confirmed that everything was being done that could be done.

Swent: There wasn't much they could do.

Strauss: No. These hot packs were supposed to be the thing to relax the muscles. So he wished me luck, and said it would be long and difficult, and of course, it was.

So she remained at Gallinger, which was the only hospital in Washington that would take polio patients, from--she was admitted the 12th of October and she left there at the end of January. Then I had been in touch with the Warm Springs people in part through Mr. Clayton, in part through Janet's father, Mark McCloskey, and Mrs. Roosevelt. They agreed to take Elaine.

Swent: Of course, you must have been worried about your children or you getting it, too, because we didn't know at that time how it was spread.

Strauss: No. That's why they required you to wear a mask and everything. A lot--the medical opinion was that my son might have had a very mild episode. He had a little fever one day. My daughter didn't have any. But where she [Elaine] contracted it, one theory was

that she did so much swimming up at Great Barrington during the summer, she might have picked up a bug in the water.

Swent: It was just such a terrifying thing at that time.

Strauss: It was just really awful.

Swent: We didn't know where it came from or anything about it.

Strauss: No.

So she went to Warm Springs at the end of January and remained there until November, except for an episode that she describes in her book[1] when she had to have kidney stones removed, and that was done in Duke Hospital in Durham, North Carolina. Transporting her was a big problem. She was so stiff, she had to be handed in through the train window. She couldn't be bent in the corridor to get into her berth.

But she survived.

Swent: And she did regain some motion?

Strauss: She regained some mobility. She was able to sit up. At first, the doctors weren't sure she'd ever sit up again. She was able to sit up; she was able to stand in water. She loved the pool at Warm Springs. She regained enough use of her left arm and left hand so that she was able to use the IBM typewriter that had been designed for quadriplegics and of which we managed to get a copy. She could turn pages of a book with her left hand, so she could read.

Swent: Her vision was impaired, though, as I recall?

Strauss: Yes, but not too badly. After a while, it came back. She had double vision and she had all kinds of trouble, but eventually it came back, and she was a big reader. She enjoyed going to movies.

Swent: And she could speak?

Strauss: Oh, yes. Her speech was never really affected, interestingly enough. But one of her lungs was out, and that's what eventually led to her death, was a respiratory infection. Other than that, her health was reasonably good. The kidney stones were the

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[1]Elaine M. Strauss, *In My Heart I'm Still Dancing*, New Rochelle, New York, 1979.

result of immobility. So it became very important to turn her constantly and get her up as much as possible. And the nostrum was, drink lots of cranberry juice. It apparently combats--

Swent: It was available then?

Strauss: Yes. Only pure cranberry. Now you can get cran-apple, cran-raspberry, all the others. It was available, and she drank a quart of cranberry juice every day of her life for thirty-seven years.

Swent: She lived for thirty-seven years after that?

Strauss: Yes.

Swent: That's a long time.

Strauss: She got sick in October of '45 and died in May of '82. It wasn't quite thirty-seven years; thirty-six plus.

Swent: She had to have a lot of excellent care to live that long.

Strauss: Yes, she did. With a very strong spirit as well.

Swent: And a very strong helpmate.

Strauss: Well.

Swent: That certainly was a long, hard time for you.

Strauss: Yes. Well, I had to change jobs, find a house in New York, make sure the children were taken care of.

Swent: I had heard that your wife was an invalid, but I had never known the extent of her disability.

Reflection on Government Service; Legacy of Price Controls and the Resentment of Supplier Nations

[Interview 2: August 24, 1994] ##

Swent: We're continuing now; we had stopped yesterday as you were just ending your government service and going to work for AS&R, but perhaps you'd like to do a retrospective of government service. I had asked you whether you'd considered continuing in government

service, and you said no, but you didn't explore it, and perhaps you'd like to go into that a little more.

Strauss: Right. Well, I had the feeling that government service in wartime was very different from government service in peacetime.

Swent: I imagine you're very right.

Strauss: For example, at no time, even in March of '41, when I joined the effort in Washington, did anybody ever ask me whether I was a Republican or a Democrat. To this day, there's no record, as far as I know, in Washington as to what, if any, political affiliations I had. It was considered irrelevant. The country was in peril, and eventually at war, and the objectives were clear: win the war. Do it in the way that would cost the least money, and certainly cost the least lives.

This spirit accounted for the lack of friction, as far as I could observe--I cited the rivalry between Jesse Jones and Henry Wallace earlier--but this was really an incidental matter. The people who were in Washington on the civilian end of the war effort worked extremely hard with a minimum of bickering and animosity of any kind toward each other. There was a great spirit of camaraderie certainly in the RFC and its subsidiaries. We all liked each other; we helped each other wherever and however we could. This makes me very proud of my experiences in Washington, as well as extremely grateful because of all that I learned by working as I did with a group of intelligent and able people.

One other conclusion that really has struck me in the years since the war ended, and that was that during the war, it was astonishing how well the price controls worked. There have been efforts since the war to effect price controls, both under President Johnson and under President Nixon, and they were abysmal failures. Thinking about it, I have decided that perhaps the reason that price controls worked so well during World War II and not subsequently was that during World War II, in effect, at least as far as raw materials were concerned, there was such a clean dividing line between the area under Allied control and the area under Axis control.

In the area under Allied control, there were really only two governments involved that represented major consuming nations of raw materials: the United States and Great Britain. We were the only two large markets for raw materials. Both governments were intent on making price controls effective, with the consequence that the sellers of raw materials, for example, producers of Chilean copper or of Mexican lead, if they wanted to sell their

products, had no alternative except to sell to the United States and to Great Britain, and to sell at the prices which the sellers named.

This worked very well for the two combatant countries during the war. But a resentment built up in many of the developing countries about the fact that they had no voice, really, in determining the prices for their raw materials during the war, because they only had two buyers, and those two buyers were united against them. That resentment accounts in part for the fact that in the postwar period, I think, the developing countries made these determinations to try to take over the control of the marketing of their own materials, and to if not absolutely control the prices at which they were sold, at least to greatly influence them.

It also accounts, probably, for some of the episodes such as the nationalization of properties owned by foreign investors.

Swent: That didn't come until really much later.

Strauss: It came much later, but the resentment was very deep and lasted. In the case of Chilean copper, for example, the concept in Chile was that Anaconda and Kennecott, the two big American companies operating there, deliberately kept the price of copper down because they were in the fabricating business as well as in the mining business, and they wanted cheap supplies of copper for the purpose of producing their fabricated products.

Overlooked was the fact that the price of copper was dictated not by Anaconda and Kennecott, but by the United States government. Indeed, from the standpoint of the mining companies, the profits that they earned in the fabricating end of the trade were never a significant part of their overall profits. The real profitability of Anaconda and Kennecott over the years came from the earnings of their mines, and they would have been far better off during the war had the price of copper been much higher than it was. The fact that the price was low was due to the controls imposed by the government.

This was not understood in Chile. But I had repeatedly read statements made by Chilean politicians attacking Anaconda and Kennecott for deliberately keeping the price of copper low in order to obtain more profits out of their fabricating enterprises. When finally in 1970 Allende nationalized or expropriated the American-owned copper mines in Chile, one of the things he said was that he was not going to pay the companies anything for their mines because they had made such enormous profits as a result of it. It was felt in those countries that

the prices of raw materials had been manipulated to be kept below the true value in order to enrich the consuming countries, which were also the countries which had provided the investment.

So my conclusion about this entire question of price control is that price controls of raw materials will only work under the kind of conditions that prevailed in World War II, which were in a sense unique: namely, that the number of buyers is limited, the number of sellers is large, and the sellers are at the mercy of one or two buyers.

Minimal Black Markets

Swent: And there wasn't any black market possibility.

Strauss: There was nobody in a position to buy materials and use them on a large scale in place of the two governments. As I said earlier, the two governments became in effect the sole importers in that market. Nowhere else--

Swent: And they were in agreement.

Strauss: And they were in agreement. And nowhere else in the area physically available to the exporting countries were there large fabricating plants to use the raw materials. So they had no alternative markets, and the black markets did not develop during the war.

Interestingly enough, and perhaps we'll discuss this a little later when we come to the period of the Korean War, the situation there was very different, because by the time of the Korean War, the European countries were on the road to recovery, helped by the Marshall Plan. France, Germany, the Scandinavian countries, Switzerland, Holland, Italy, Belgium, were already large consumers of metals once again. They were actively seeking supplies of materials. They bid against each other. And so the efforts to control raw material prices during the Korean War didn't work. There were too many buyers.

But during World War II, at least after the United States entered the war, as I said, there really were only two buyers available to the producing, exporting countries of Africa and Latin America, not to mention Canada, Australia, and the dominions.

So World War II was perhaps unique in this respect, both with regard to price controls and with regard to the absence of sizeable black markets. I think around the fringes in the United States, there was perhaps a little black marketing, grey marketing, consumers who received War Production Board allocations; perhaps some of them may have cheated a little bit. I heard from my wife's family in the costume jewelry trade that in spite of the regulations limiting the use of metals in costume jewelry, some of the smaller manufacturers were able to get additional supplies, whether from scrap or from metal that was resold to them by people who were supposedly using the metal for war-approved purposes.

But I think this was de minimis. I don't think that we really had in the raw material field any substantial diversion of materials into more profitable channels by black marketers. It worked extremely well during World War II.

Swent: The populace, too, was pretty much united in its attitude.

Strauss: That's right, exactly.

Swent: It was a war that we all agreed was necessary.

Strauss: Yes. And one of the things that was emphasized repeatedly to the general public was the importance of turning in materials for recycling in the form of scrap. Toward the middle of our entry into the war, there was a separate corporation set up, the name of which escapes me at the moment, which was headed by Mr. C. W. Nichols, who had been the head of the Nichols Refining Company, which was actually by then a part of Phelps Dodge. But it made an effort to get the public to contribute materials that weren't in active use to be melted down and used in the war effort.

This made a lot of people feel very good. I recall one quotation, I think in the press or on the radio, was that of a lady who operated a beauty salon and had contributed the aluminum head piece used by her clients when their hair was being dried under the dryer, and she was quoted as having said that as she looked up in the sky and saw the B-25's sailing overhead, she thought to herself, "There goes my aluminum hair dryer."

It was the kind of thing that made people feel good, but in fact, much of this material was still on hand when the war ended. It had never been converted into refined metals, simply because the capacity wasn't there to cope with these huge volumes that were turned over. But I think from the standpoint of the public morale, it made people feel good to think that they were contributing something that might be useful in the war effort.

Preclusive Control of Materials: U.S. Commercial Corporation

Strauss: One other aspect of dealing with the war was the so-called preclusive effort involved in trying to keep materials out of the hands of the Axis powers. A fifth company was added to the list of the RFC wartime subsidiaries called U.S. Commercial Corporation. The name Commercial was sort of ironic, because in fact, what U.S. Commercial Corporation did was to go into areas such as Spain, Portugal, and Turkey, where there were certain supplies of mineral products in particular being produced, and pay fantastic prices to buy them in order to keep Spanish lead or Portuguese tungsten or Turkish chrome from falling into the hands of the Axis powers. This was a sort of a cloak-and-dagger operation, similar to some of the activities of the CIA [Central Intelligence Agency], and it was reasonably successful at diverting materials from the Axis.

Swent: Were these negotiations also done in Washington?

Strauss: No, they were not. People were sent to those countries to do the buying. They reported back to Washington. They had wide discretion as to what they paid, and probably in some cases they paid more than they needed to, but it was considered desirable to keep the material out of Axis hands.

In the enthusiasm for promoting the war, some suggestions were made that were quite ridiculous, from a commercial standpoint. For example, Metals Reserve Company had bought small quantities of beryl ore in Brazil. Beryl ore is used to produce beryllium, and beryllium copper and beryllium aluminum alloys, and had significant military applications. So in an effort to assure adequate supplies, we did buy beryl ore in Brazil.

As I earlier mentioned, during the years '42 and early '43, there was a good deal of apprehension about the rate at which the freight-carrying ships were being sunk in the Caribbean.

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Strauss: So we decided that rather than risk losing it at sea, since for the time being there was an adequate supply in the United States, the Brazilian purchases would be kept on the ground in Brazil rather than shipped to the United States.

One advocate of the use of airplanes for carrying cargo suggested that we ship the beryl ore by air from Brazil, by commercial airliner. At that time, Pan American Airways did operate a service out of Brazil. They quoted us a dollar and a

half a pound--in other words, $3,000 a ton--to ship this material by air. At the RFC, we felt that this was a somewhat excessive price to pay for transportation of a product that we had bought for seventy dollars a ton. But when I made this observation at a meeting, this one advocate of air transport told me that I was putting dollars ahead of the blood of our fighting men. Of course, there was no issue about putting it ahead of the blood of the fighting men, because the beryl-consuming industries were getting all the beryl they needed without having to fly this material.

I cite this simply to show that, for some people, any reference to commercial considerations was considered unpatriotic. Money should be spent regardless of cost to accomplish whatever the person had in mind. This was not the spirit of the RFC, but we had occasionally to overcome somewhat overzealous suggestions such as the one about the beryl ore.

Silver Provided to Allies for Coinage in their Colonies

Swent: One thing that I wanted to explore--it was mentioned in a couple of the papers that you sent me--was the use of silver during the war in colonial areas; we gave silver to the Allies?

Strauss: Yes. One of the interesting programs that was undertaken early in the war was to provide silver for coinage in areas which were threatened particularly by the Japanese. After the fall of Burma, there was great concern that the Japanese might go on and take all of India. In India, silver has long been regarded with great respect as the traditional storer of value. The Indian population knew that when the Japanese came into an area, such as Burma or Thailand, they immediately declared all circulating currencies to be invalid and put their own paper money into circulation. This meant that the British currency then circulating in India was looked on with some distrust by the Indian population. The British felt that perhaps if they could issue silver coinage, which had not been circulating in India during the immediate prewar period, that this would restore confidence in the currency.

So the United States Treasury, under the purchase program that I discussed earlier, had very large quantities of silver on hand. Several hundred million ounces of silver was provided to the British under the Lend-Lease program, minted into rupees, put into circulation in India, and began to restore confidence on the part of the Indian population in currency. Because obviously, if

they had silver coins, those silver coins would have some intrinsic value which paper currency or base metal coins would not have. The Indian program was the major program; there were several other much smaller ones.

Swent: I thought some in Africa.

Strauss: Saudi Arabia, I think, was the case. I forget, but I could look it up, what the others were. But this Lend-Lease program was effective, and after the war, in fact, much of the silver was repaid to the U.S. Treasury. It simply was a way of restoring confidence in currency.

Strategic Military Use of Silver: Photographic Film, Desalination

Strauss: Silver had quite a few intrinsic roles in the war effort which are not appreciated. For example, most of the war planes were fitted with automatic camera devices by which whenever the guns of a fighter plane were in action, photographs were taken, and this accounts for the very dramatic pictures of the fighting in the air with which the public is familiar. Millions of ounces of silver went into the production of the film for this purpose.

Another essential war use was that the lifeboats of the merchant vessels and the naval craft had to carry desalination kits as part of their essential equipment. These were kits which enabled the conversion of sea water into potable drinking water for anybody who was adrift in a lifeboat. Those desalination kits operated with silver as the means of removing the salt from the water. So this was quite a significant military use of silver during World War II. Many millions of ounces of silver were used for that.

Swent: Was there any comparable use of gold?

Strauss: Not to that extent, no, because this was before the days of the satellites. The big use of gold in government programs for purposes other than monetary has been in gold plating of the space exploration vehicles. No, there wasn't, but silver did play a significant role, and there was a good deal of concern about the available supply of silver. While the war was on, as I've said previously, the U.S. mines were all selling their silver at a price determined by the legislation. It was half of the monetary value, sixty-four cents an ounce. The world price, the price paid to silver producers outside the United States, had

been around forty or forty-five cents an ounce and I believe rose during the war to about fifty or fifty-five cents an ounce, but never quite got up to the level that was paid to the U.S. mines.

Well, these are just a few thoughts about some of the aspects of the mining industry during World War II.

Securities Analysis and Mineral Economics: A New Field

Swent: I did have one other question about your securities analyst work: you were working for Standard Statistics as an analyst of mining stocks. There must have been other analysts--I don't know who existed at that time, Value Line didn't come on the scene until later, but there were--

Strauss: Our principal competition at the time, there was Moody's, which is still in existence, and Poor's, which later merged with Standard Statistics to form Standard and Poor's. Those were the three comparable services. Of course, the individual brokerage houses had their own analyst staffs.

Swent: And they all must have had analysts who were specialists in these same stocks.

Strauss: Yes, they did, and I got to know them fairly well. I never did meet the Moody's or Poor's people. I don't think they did as comprehensive a job in dealing directly with the industry. But in general, securities analysis then was much less sophisticated than it is today. Today, a person with my limited educational background would never be hired as a securities analyst, because I hadn't gone to a school of business administration and been taught to analyze balance sheets, understand the finer points of various types of securities. I was in effect self-taught on this. I learned by doing. But today, that would not be adequate.

Swent: You'd have to have a Ph.D. in economics or finance.

Strauss: Something comparable to that. It's very interesting that today, a number of mining schools have courses in mineral economics, Penn State and Colorado School of Mines being the outstanding examples, and a very high proportion of those trained in mineral economics never work for a mining company. They go to work for a bank or for a securities firm on graduation. As we will discuss later on, I've taught courses at some of these schools, and most of my former students are now working for banks, or for brokerage

houses, or for these analytic services such as Commodities Research Unit, which didn't exist then.

Swent: You were in a new field, in a sense.

Strauss: Yes. It was an emerging field.

VII AMERICAN SMELTING AND REFINING COMPANY [ASARCO], 1946-1981

AS&R at 120 Broadway

Swent: All right. Are we ready to go to AS&R now?

Strauss: I think so.

Swent: Which was at that time known still as AS&R.

Strauss: AS&R, American Smelting and Refining. Very rarely referred to then as Asarco. It was a major company with a very interesting and diversified group of operations.

Swent: Let's just get the date--we have it earlier--but this is 19--?

Strauss: Yes. I went to work January 1, 1946.

Swent: And their head offices are in New York City?

Strauss: Their head offices then were at 120 Broadway in New York, as they had been since 1913. The company was the largest tenant in that building, which is known as the Equitable Building, and had been there continuously since the building was opened. So that sometimes, when people wanted to discuss developments, they would cryptically refer to the company not as AS&R or as American Smelting but as 120 Broadway. Anybody in the metals trade, if somebody said, "Well, 120 Broadway is selling zinc for seven and a half cents a pound," they knew that that meant that it was American Smelting and Refining Company that was selling.

The company had long been dominated by the Guggenheim family, but by the time I joined it in 1946, the only persons of the Guggenheim family who were connected were Mr. Roger Straus, whom I referred to earlier, who was president, and his son,

Oscar, who was in the financial department and eventually became vice president and treasurer.

The operations of American Smelting and Refining Company included a very large number of copper, lead, and zinc smelters in the United States; two lead smelters, a zinc smelter, and a copper smelter in Mexico, together with a lead refinery in Mexico. It included directly owned mines in the United States, principally lead-zinc-silver operations in Idaho, Colorado, Arizona, New Mexico--

Swent: Tennessee?

Strauss: At that time, they did not operate in Tennessee. It included a copper mine in Peru, and about nine or ten major mines in Mexico, principally silver and lead and zinc. Copper mine production was not a significant part of the company's operation at that time, but it had a number of interesting copper prospects which came into play in the postwar era while I was with the company, so that it eventually became a very significant copper producer.

Mt. Isa Mine, Australia[1]

Strauss: The most valuable single investment was the ownership of an interest in Mount Isa Mines in Australia. At that time, the ownership was through an English company called Mining Trust. Subsequently, Mining Trust was dissolved and Asarco became a direct owner of Mount Isa. The percentage of Mount Isa owned by the company has varied greatly from time to time. It got up to a maximum of 52 or 53 percent during the fifties and sixties.

Mount Isa mine was recognized then as a major lead-zinc producer and a potential copper producer, but the extent of the copper resources of Mount Isa was not clear when I joined Asarco. It was only in the drilling that occurred during the immediate postwar years, from '46 to '52, that it became recognized that in fact the copper resources at Mount Isa were as great as, if not greater, than the lead-zinc-silver resources. It's a unique property in the sense that I'm not aware of any other comparable situation in the world where a major copper deposit containing no lead or zinc lies within really just a few hundred feet of major

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[1]For more on Mt. Isa, see interviews with Frank Joklik and John Turney, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, in process 1995.

lead-zinc-silver deposits with little or no copper in them. It has developed to not only one of Australia's largest mining enterprises but perhaps in the world. It has become at times one of the largest copper producers, one of the largest zinc producers. For many years, it's been the largest single lead-producing mine in the world, and the largest silver-producing mine in the world. So that was a major holding of Asarco.

Swent: And this was an old--this was not new at that time.

Strauss: No. It went back to 1931, when American Smelting and Refining Company put up money which the original promoters had been unable to raise, either in Australia or in England. The cost of bringing the mine into production was great.

Swent: So they'd been in on it from the beginning?

Strauss: Yes. The first real manager of the Mount Isa enterprise was a man named Julius Kruttschnitt. Julius Kruttschnitt had been in charge of the Southwest mining division of Asarco with his base in Tucson. When Asarco came to the financial rescue of the enterprise which was struggling to raise enough money to get into production, it was stipulated that the management of the mine should be in the hands of Asarco, and Mr. Kruttschnitt was nominated to go out there.

He was a wonderful man. He did a remarkable job. And symptomatic of his early connections with the Southwestern United States is when he built his manager's house at Mount Isa. He called it Casa Grande. It was a beautiful house built in Southwestern U.S. styles in the middle of the Australian desert, and is still there. It's no longer the manager's house; it's the guest house for important visitors to the Mount Isa enterprise. The Queen of England has stayed in the Casa Grande when she visited Mount Isa in the late fifties or early sixties.

Swent: Where is Mount Isa? Which state is it in?

Strauss: Mount Isa is in Queensland on the east coast of Australia. Queensland is an enormous state. It is much larger than Texas; it's almost as large as Alaska. Mount Isa is situated 500 miles or so from the ocean, due west of the town of Townsville, to which it is connected by rail. It is almost 1,000 miles in a straight line from Brisbane, which is the capital of Queensland. I referred to it as being in the desert; it's a very parched country. I think the rainfall is ten or twelve inches a year. Extremely hot in the summertime. As a result of the Mount Isa development, several large reservoirs have been created to dam up the water when it does come during the rainy season. There are

two so-called lakes now in existence, one of which, interestingly, is named Lake Julius, that having been Mr. Kruttschnitt's first name.

And it has transformed the countryside. There has been all kinds of vegetation brought in. The residents of the town of Mount Isa, which today has a population of about 25,000, are given unrestricted access to water in the desert, and they grow fruit--oranges, grapefruit, lemons--in an area where there was previously desert, and it's really become a sort of a jewel in the desert.

Swent: When did you first go there?

Strauss: My first visit was in 1956. After Mount Isa recognized the extent of their copper resources, they not only built a copper smelter at the mine but they built the copper refinery at Townsville, and Julius Kruttschnitt's successor, Sir George Fisher, who was then the manager, asked me to come out to talk with them about how to go about marketing their copper. Because it was understood, to recognize the Australian wishes to control their own destiny, that they would do their own marketing. But they always did it with the advice of and discussions with Asarco. We had a very collegial relationship at the time, so we discussed the various alternatives for marketing Mount Isa's copper on my first visit.

Swent: What were these--we're jumping ahead, but as long as we're on this, let's--

Strauss: Yes.

Marketing Copper from Mt. Isa

Swent: What were the decisions to be made?

Strauss: First of all, at the time, the internal consumption of copper in Australia was growing, so there was the home market to be considered.

Swent: The refineries refined to the point where it could be used?

Strauss: Yes. The refinery at Townsville produced very highgrade, good quality copper, and it was equipped to make all of the shapes that were then used by industry: not only wirebars, which are used by the wire and cable business, but also we made provision--

I say "we"; the company made provision--to produce cake and billet. Cake are big square chunks of copper which can be rolled into sheet, and billets are used usually for extrusion into tubing, since the plumbing use of copper is considerable. And of course, the first step in producing refined copper is to produce copper cathode. That was done, but in addition, there were these facilities for casting into the three additional products that I mentioned.

So Mount Isa was going to supply the home market in Australia. There was a small copper smelter and refinery, very small, in New South Wales, which had handled the quite limited production of copper concentrate in Australia and also recycled scrap. But Mount Isa was clearly going to be the biggest source of copper for Australia.

In addition to that, the logical markets for Mount Isa were Japan and Western Europe. The question was what shapes to produce, how to ship the material, and so on, which I discussed when I went out there in '56. And after that, I made trips about once every three or four years, not only to discuss the marketing of the copper but also such questions as whether or not Mount Isa should build a zinc smelter. They never did until after my retirement, when instead of building a smelter in Australia, they took an interest in a major zinc plant in Germany. Also questions about lead, silver.

Australia is so far geographically removed from the rest of the world--although today with air transport being as efficient as it is, it's much less remote than it was at that time, when planes were slower and took much longer to get there--that the Australian managers welcomed a chance to have face-to-face discussions with somebody who was in touch with metal markets in the world, just to find out what was going on. After all, they were exporting these products to the world markets, and they needed to know what was going on.

So we've gotten sort of diverted into Mount Isa. I was talking about Asarco.

Swent: Let me ask one more question: these smelters and refineries in the United States and Mexico were wholly owned by AS&R?

Strauss: Absolutely, all of them, at that time. Later there were changes.

Swent: But at that time, they completely owned those?

Strauss: Yes.

Swent: And in Peru, the mine was completely owned?

Strauss: By Asarco.

The Buchans Lead-Zinc Mine, Newfoundland

Strauss: Then there was a significant mine in Canada, the Buchans lead-zinc mine, actually in Newfoundland. Newfoundland had been independent, a separate colony of the British Empire, prior to the war. But after the war, Newfoundland was joined to Canada and became part of Canada. So if you look at the statistics, in the prewar period you'll see Newfoundland as one of the countries producing lead and zinc concentrates, but then after the war it's just part of the Canadian picture.

The Buchans mine was not owned outright by Asarco. It was jointly owned with a paper company on whose forest lands the property had been discovered. Incidentally, one of the interesting things about the Buchans mine is that it is probably the first major base metal deposit to have been located by geophysical methods, and that had happened in the 1920s.

Swent: By Asarco people?

Strauss: By Asarco explorations. The location of Newfoundland is such--it's one-third of the way from North America to Europe--that the logical place for Buchans concentrates, the logical place to sell the zinc concentrates--there was a mill but no smelter in Newfoundland--was to sell the concentrates in Western Europe, primarily in Belgium but also they shipped to France on occasion and to Germany.

Swent: When you say there's a mill but no smelter, how did they concentrate them then?

Strauss: In the mill.

Swent: By gravity?

Strauss: No, flotation process. And during the war, Buchans had been cut off from its normal market. They therefore had to sell concentrates either in Canada, the United States, or Great Britain, and it was partially as a result of the availability of the Buchans concentrates that Asarco decided to build its electrolytic zinc plant at Corpus Christi in Texas. In fact, curiously, my first real dealings with Roger Straus of American

Smelting and Refining Company were when I was at Metals Reserve Company and we made a contract under which we agreed to buy the production of the new Corpus Christi zinc smelter for two years, in order to encourage the company to build the smelter during the war, which was done. And on its part, American Smelting and Refining Company agreed to supply the smelter with concentrates from the Buchans mine.

Swent: How did they ship them from Buchans to Corpus Christi?

Strauss: By boat.

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Strauss: The transit along the East Coast, the Atlantic Coast of the United States, was never as hazardous as the Caribbean. There were some sinkings by German submarines along the Atlantic Coast of the U.S. during the war, but they were not nearly to the extent of what was occurring in the Caribbean.

Buchans had no alternative but to ship them. Newfoundland is an island; they had to put the material on a ship to get it anyplace, and it was less risky to ship the concentrates to the United States than to ship them across the Atlantic to Great Britain, where there were zinc smelters at Avonmouth. So that Buchans mine was a significant asset of Asarco's at the time that I joined the company.

AS&R's Federated Metals Division

Strauss: Now, in addition to all of these operations that I've described, which are really basically base metal mining and smelting and refining operations, when I joined Asarco, a significant activity was its so-called Federated Metals Division, which was a chain of recycling, scrap recycling plants, across the United States, that had been acquired by the company in the 1930s. There were significant plants in New Jersey at Newark and Trenton, in Texas in Houston, just outside Chicago at Whiting, and in the San Francisco Bay Area, the so-called Army Street Plant in San Francisco.

These plants treated copper, lead, zinc, made various alloy products like the bearing metal solder, brass and bronze ingots. Federated dealt directly with scrap dealers as well as with the large industrial corporations that generated quantities of scrap in the course of their operations: for example, the copper

fabricators, brass mills, and wire mills. It was a distinct, separate division that had its own commercial activities. The sales department of Asarco, which I joined, did not handle Federated's products. Federated had its own sales organization; it had its own scrap buying organization.

Since some of the primary plants of Asarco also bought scrap as feed, particularly clean copper scrap to go to the copper smelters or refineries, or discarded lead batteries to go to the lead refineries, there was a company scrap committee which would meet once a week, where representatives of the Asarco's ore department, Asarco's sales department, and the Federated departments would meet and discuss the state of the scrap market, what prices we should be paying, what we should be doing. We met weekly, and those were very lively sessions, because there were wide differences of opinion.

Swent: So in effect, one division was buying from another?

Strauss: At times, there were transactions between the two. Federated, in order to produce some products, like solder, would have to buy tin, because the company didn't produce tin, but they might require pure lead rather than scrap lead for production. So they would buy from the sales department. And like all large companies which have transactions between separate divisions, there were great differences of opinion at times between the parties involved. But we managed to get along.

Rising to Be Vice President and Director of Asarco; Director of Revere Copper and Brass and General Cable Corporation

Swent: We haven't said specifically what your job was. What was your title?

Strauss: When I joined, I was simply a member of the sales department of AS&R. Mr. Kenneth Brownell, who had interviewed me and asked me to come with the company, was then the vice president in charge of sales. It was never explicitly said, but I understood that Mr. Brownell would probably be leaving his post to go into the top management of the company. He became executive vice president and then later president and chairman. In our discussions, it was indicated to me, although no promises were made, that I stood in line, would be considered to be either the manager of sales or vice president of sales, and in fact, I joined, as I said, on January 1, '46; January 1, '47, I was made sales manager. And in 1949, I was made a vice president, and in

1952, I was elected to the board of directors of the company. So I was offered--

Swent: It was a rapid rise, wasn't it?

Strauss: A fairly rapid advance. And not only was I a member of the board of Asarco, but among the company's major investments, it had interests in two fabricating companies. Anaconda and Kennecott had 100-percent-owned fabricating divisions; Asarco, as a major refiner of copper, had acquired a substantial interest in two of the major fabricating companies: Revere Copper and Brass, and General Cable Corporation. They were not in competition with each other; Revere Copper and Brass produced what are called brass mill products; General Cable produced wire and cable products.

And because of its substantial holdings in these two companies, which amounted to about 35 or 40 percent of each of the companies, Asarco had the right to nominate several people to the boards of those companies. In due course, I joined the boards of both Revere and General Cable. They had completely independent management other than the presence of Asarco people on the board. They bought copper from Asarco, but only on competitive terms with what other copper producers were able to make. We had good relations with the purchasing managers of the two companies, but we had no real edge. We dealt on a competitive basis against other suppliers. Kennecott was a large supplier to both of those companies; Anaconda was not, because Anaconda's production of copper, large as it was, was almost totally absorbed by its own fabricators, so it was not a major seller of copper in the United States. They did not to any great extent buy from Phelps Dodge, but they did buy from many of the other sellers, including imported sources such as Noranda.

Some Antitrust Litigation

Strauss: So our presence on the board was really to protect our interest. That was later challenged by the Justice Department; that was some years down the way after I joined the company.

Swent: It was considered a conflict of interest?

Strauss: Well, it was. The curious thing was that Justice Department officials were more interested in Asarco's partial ownership of these two companies than they were in Anaconda and Kennecott's total ownership of their fabricating subsidiaries, a conundrum

that I never quite understood. There were hearings. The cases never came to trial, with regard to General Cable and Revere. We made settlements, and in due course, Asarco eventually disposed of its interests in both of those companies. But that was many years later. I remained on the boards of those two companies well into the sixties, possibly even the early seventies.

Swent: Were you involved in the hearings? Did you have to testify?

Strauss: Oh, yes. I have been involved in a lot of hearings. [laughter] One of the most protracted litigations we were involved in was an allegation by the antitrust division of the Justice Department against Asarco and St. Joe Lead.

Swent: When was this?

Strauss: This was in the fifties; I don't remember the precise date. The Justice Department believed that these two companies, which were in fact the largest suppliers of the U.S. market, were conspiring to control the lead market, and they pointed to the fact that the Asarco lead smelter at Alton, Illinois, was fed primarily with concentrates produced from St. Joe's mines. St. Joe at the time did not have adequate smelting capacity to handle all of its output. This arrangement was considered to be an effort by the two companies to control the lead market.

The case actually never came to trial, but we did talk at great length with the judge who had been assigned to the case. We explained the pluses and minuses, and there was finally a consent decree under which the arrangement for Asarco to smelt St. Joe concentrates was terminated at some point within a couple of years, as I remember it. I may be wrong about that, but I think it was that. And so the Alton lead smelter was eventually closed down as a result of this, and St. Joe expanded its own smelter.

The Glover, Missouri, Smelter

Strauss: Later on, Asarco did build a new smelter in the area at a small town called Glover, as production of lead in Missouri increased.

Swent: When was that big boom? It was not too long after that.

Strauss: In the sixties, yes, that's right. The so-called Viburnum Trend.

Swent: But the Alton smelter had already closed down and wasn't revived?

Strauss: It was not revived. Instead, a new smelter was built closer to the area where the new developments were taking place, and it was fed primarily by ore from a mine developed by Kennecott, a lead mine. Kennecott didn't want to get into the business of smelting and refining and selling the lead; they were quite content to sell concentrates. So that was the principal source for the Glover plant, but there were other people who were producing lead in the area. Plus the fact that from time to time, we would ship in lead concentrates from Mexico or from mines in the West or from Australia, and treat them at the Glover plant.

Swent: I'm not quite clear on the difference. Why is some ore smelted--is it either smelted or refined, or is the refining after the smelting?

Strauss: No, it's both--that is correct. The product of the smelter is something called lead bullion. The lead bullion still contains the silver, if there is any in the ore, and other minor contents, perhaps antimony or bismuth. To make the lead usable by industry, these metallic impurities had to be removed from the bullion, and that is what is called the refining. It's not a terribly complex step unless the impurities are of very detrimental elements.

Swent: So you can sometimes sell things directly from the smelter?

Strauss: No.

Swent: It always needs further refining.

Strauss: As far as I can recall, there is no market for lead bullion as such. The value of the silver is such that in any case, you do want to get it out of the lead.

Swent: So then essentially, everything is smelted and refined.

Strauss: And refined, that's correct.

Swent: But the smelter and the refinery are not always next to each other?

Strauss: No. In fact, usually they are not.

Swent: Not. So the shipping gets into the picture.

Strauss: Yes, that's right.

The Omaha Smelter

Swent: The location of your smelter is close to the mine?

Strauss: It is closer to the mines. The refinery tends to be closer to the market, or on the way to the market. Asarco's largest refinery for years has been the Omaha refinery, which was built to refine all the bullion produced at Asarco smelters in Montana, Colorado, Utah, or other Western states.

In addition to its own bullion, Asarco for a while was refining lead bullion from the Anaconda organization. Anaconda had some interests in lead mining in Montana and Utah, and in fact operated a lead smelter at a place called Tooele in Utah. But they did not have a refinery. So Asarco would refine their lead for them on what's called a toll basis, the lead being returned to Anaconda. Anaconda's smelter was operated by a subsidiary called International Smelting and Refining, and they asked us to cast the refined lead for them at Omaha to brand as International Smelting and Refining lead. The reason was that their fabricating subsidiaries, particularly--well, as a matter of fact, both of them, both American Brass, which produced brass mill products, and Anaconda Wire and Cable, which produced wire and cable, used lead. The wire and cable plant used lead as a sheathing for the cable. The American Brass used lead in conversion of copper into various brass alloys, many of which contained as much as 5 percent lead.

So Anaconda was anxious that its fabricating subsidiaries used lead with the IS&R label, but of course, it was sort of a travesty, because at Omaha the Tooele bullion was not refined separately, but was comingled with lead bullion from the East Helena, Montana, or from Leadville, Colorado, or Asarco's other Western lead smelters. I tried for years to get Anaconda to agree that we could deliver lead for their account against the toll arrangement from our lead refinery at Perth Amboy to their fabricating plants located in the New York or Connecticut areas, because freight costs were much less, instead of shipping it all the way from Omaha. Anaconda had some fabricating facilities in the Middle West, and Omaha was the logical source. I said to them, "If you'll let us deliver Perth Amboy lead to, say, Hastings-on-Hudson or Waterbury, Connecticut, we'll be glad to split the freight savings with you."

"No, no, no, no, no, we've got to have our own lead," they said. [laughter] Which sort of struck me as being very childish.

Swent: That's interesting.

Strauss: It's different when you have manufactured products with brand names on them, and differences in styling or facilities, like automobiles, for instance. But when you're talking about a basic commodity like lead or copper, you're really talking about a standardized item. It doesn't make any difference what brand is put on it, provided it meets the specifications of the American Society for Testing Materials or other organizations. I mean, you delivered the specifications. That's a sidelight.

Swent: The lead and the zinc, were they smelted at the same place?

Strauss: There are some smelters, but Asarco doesn't have one, that handle what is called the bulk concentrates. At some lead-zinc mines ore is not separated by differential flotation to make separate lead and zinc concentrates; instead, they produce a bulk concentrate. In the sixties, the Imperial Smelting Company, which was a subsidiary of what is now the RTZ, the Rio Tinto Zinc--Imperial Smelting developed a process for handling bulk concentrates. There are some of these facilities around the world, including such a smelter at Avonmouth in England--I think maybe my Welsh friends would say Wales. And in fact, Mount Isa is now opening a new mine in the Northern Territories of Australia, which will produce a bulk concentrate from the McArthur project where the lead and the zinc will be smelted in a single plant to be separated by the Imperial process. But Asarco did not operate any such facilities, and the lead smelters and the zinc smelters were at separate locations.

Swent: And the copper facilities were also separate?

Strauss: Were also separate. Although at El Paso, Texas, Asarco operated a plant that had both a lead smelting and a copper smelting facility. They were at the same location, but they were totally separate operations.

Swent: What was Tacoma?

Strauss: Tacoma was purely copper.

Swent: And Selby was purely lead?

Strauss: Selby was purely lead, that's right.

Improved Recovery of Zinc and Lead from Slag in the 1960s

Strauss: One of the developments that was an important factor in the metal markets in the sixties and seventies was in the production of zinc fume from the lead smelters. Because of the high zinc content of some lead concentrates, there was a substantial zinc content in the lead smelter slag that might run 10, 12, 15 percent. A process was developed whereby the zinc in this slag was recovered. The zinc was recovered in the form of a highgrade zinc oxide running 60 or 70 percent, which would then go to a zinc smelter to be recovered as zinc.

This for a time was a very important factor in the economics of some of the major lead smelters. The El Paso lead smelter, for example, shipped its zinc fume resulting from the treatment of the slag to the Corpus Christi zinc smelter.

Swent: So the zinc fume was a solid?

Strauss: Yes. A fume sort of implies smoke, but it was a fuming process, and then the metal content was condensed out of the smoke, and it was a product which you could really call a zinc oxide.

Swent: But they called it zinc fume?

Strauss: Yes. Conversely, the opposite also happened. Anaconda and its zinc smelters in Montana, because they had two very large electrolytic zinc smelters in Montana, had very substantial lead content in their slag from the zinc operation, and an operation quite similar, from the technical standpoint, was devised. I think it was started at Anaconda, or possibly in Australia, one or the other place, for recovery of lead residue from the zinc slag, which could then be shipped to a lead smelter. Anaconda regularly shipped that product to Asarco's lead smelter at East Helena, Montana, which was close by.

So as metallurgy improved, as the technology was better understood, in effect the mining industry was achieving a major conservation. Instead of wasting thousands of tons of metal contained in slag, which might be used for railroad ballast or mineral wool or something, these slags were being retreated and substantial quantities of both lead and zinc were being made available.

Swent: Would the price determine whether an ore was considered a zinc ore or a lead ore?

Strauss: No, it would be primarily what the percentage content was. Well, of course, the price plays a role in it.

Swent: Whether or not you ship it to a zinc smelter and recover lead from the slag, or to a lead smelter and recover zinc from it.

Strauss: No, you make the concentrate first. You don't ship ore to the smelter. You take the ore, mill it, and produce a concentrate.

Swent: Right. But the decision as to what you call the concentrate--

Strauss: Was based on the content of the concentrate. Because a zinc smelter couldn't treat a--could not efficiently handle a concentrate that was very high in lead.

Swent: But your price would determine--maybe not.

Strauss: No.

Swent: The price had nothing to do with this decision.

Strauss: No. It was the decision--the price had a decision as to whether you operated the mine at all, but once you were operating the mine, because the prices were attractive, the ore was taken to the mill, and two products were made: a lead concentrate and a zinc concentrate, silver being usually a constituent of these lead-zinc ores. The silver tended to go mostly into the lead concentrate. The lead concentrate was then shipped to a lead smelter. If the smelter was owned by a different company than the mining company, payment was made for both the lead and the silver content, but rarely for the zinc content, because for many years, the zinc content wasn't recovered.

Silver and Cadmium as Byproducts

Strauss: The zinc concentrate would be shipped to a zinc smelter. It would contain some lead and some silver, but much less silver than the lead concentrate would contain. Payment was made usually just for the zinc content. In time, particularly after 1964 when the price of silver started to increase, some of the zinc smelters began to pay for the silver content if they had facilities for making these lead residues that I spoke about. Payment often for zinc concentrates included a payment for the cadmium content of the zinc concentrate, because most zinc smelters during the postwar era were equipped with facilities to recover cadmium from the production stream as it went through the

smelting, and cadmium for a while was a very valuable constituent. Currently, the price of cadmium is low, but there were times when cadmium was selling for five, six, seven, and as high as ten dollars a pound. A zinc concentrate that contained, let's say, 0.4 percent cadmium--in other words, eight pounds of cadmium in a ton--that obviously was a valuable constituent and it was recovered and paid for.

Swent: And when you paid for these things, you say paid, you were primarily selling, AS&R was selling?

Strauss: Yes. But we were buying the concentrates from independent miners, and we were paying them--

Swent: Did you pay just money? You wrote a check?

Strauss: Yes. After making all the elaborate calculations that are necessary to be made.

Swent: Well, in some cases, you gave them bars of--

Strauss: That was if it was in a toll arrangement. But for most small mines, they didn't have sales organizations. The toll arrangements are relatively few. They're usually made with large companies that have other sources of refined product and want to add to the refined product available for sale, and have enough material to afford a sales department. A smaller independent mining company will have maybe one person who will handle the negotiations for the sale of concentrates to a custom smelter. They can't afford to staff themselves with a sales organization.

The Complexity of Custom Smelting and Refining

Swent: So if you have a buying arrangement, you were buying concentrates from a small company. What would be an example?

Strauss: Well, an example would be Hecla Mining.

Swent: You would have, I suppose, a relationship with these people that would continue for years and years and years. Did you have to renegotiate periodically, and how often, and how was this done?

Strauss: It varies, and it depends on what the individual mining company wants to do. If they want to have flexibility and be able to deal with other custom smelters and refineries as well as Asarco,

they would typically negotiate maybe a contract for one or two years.

Swent: But prices go up and down quite a lot, don't they?

Strauss: Yes. But there's no obligation for the mining company to deliver. They say that they will ship to your smelter, provided they're running the mine. But if they choose to shut the mine down, they have no obligation to deliver the material. So their decision as to whether they continue to operate is based on the prices going up and down, and if the price goes down, then they close the mine, in which case the smelter loses the source of its feed. This whole question of the custom smelting and refining is quite a complex one.

Swent: It must be very complex.

Strauss: And there are people who will have a mine that starts off as a producer of concentrate, which they sell, but then as time goes on, if the mine is profitable and begins to accumulate cash, they begin to think about building their own facilities. A good example would be to cite the San Manuel copper mine in Arizona opened by Newmont for Magma Copper. From the start, they knew they had a big enough proposition to justify a smelter. But originally, they did not want to have a sales organization, so they made an arrangement with Phelps Dodge to sell the blister, which is the intermediate product of a copper smelter, comparable with bullion, the intermediate product of a lead smelter.

So Magma sold its blister to Phelps Dodge, which had a large refinery in El Paso. But after a few years, and as the production of the San Manuel mine seemed assured, Newmont, as the owner of the Magma mine at the time, decided to build a refinery, which they did--immediately adjacent to the smelter, incidentally, in that particular case. And Phelps Dodge lost that source. So when the contract between Newmont and Phelps Dodge for the refining of the San Manuel blister was about to expire, Newmont very properly advised Phelps Dodge that it would build its own refinery and it would not require Phelps Dodge's facilities any more. This sort of thing does happen.

So as companies look at their prospects, they decide how long the contract should be. Currently, because of the very high cost of opening up major new copper projects, the tendency is to open up a mine with a concentrator, but not to make the additional investment in a smelter and a refinery. This is particularly true of projects located in the developing countries, where the company is concerned about investing too much capital in what may be an unstable political situation or

currency risks or whatever the future may be. But after a few years of operation, if the deposit is large enough, they may conclude, "Well, it's time that we had our own smelter and refinery."

Most of the major new copper projects that have been opened recently around the world, and there are many of them, have only gone as far as the stage of the concentrator. Now, they have to raise a lot of money, so in order to get that money, they have to persuade the banks that they have an outlet for their concentrate. The result is that these new projects, what people refer to as greenfields projects, do tend to make long-term contracts. Ten years is the typical term. So they'll make a ten-year contract for smelting and possibly refining. It may contain particular agreement as to the costs to be charged during the first two years, with the understanding that the parties will renegotiate after two years. Or it may contain escalator clauses similar to what I described when I was talking about Alcan during the war, to protect against unforeseen contingencies such as sharp changes in labor costs, power costs, transport costs, or whatever.

So this question of the relationship between the miner and the processor is a very complex one, is constantly shifting, and it is one reason why in the mining business the companies that started out primarily as custom smelters, like American Smelting and Refining Company and American Metal Company, developed greater, if I may say so, market expertise and sophistication than the straight mining companies. The latter, with their own facilities, didn't have to take into consideration risks involved in buying others' concentrates. Anaconda particularly, but Kennecott also, are examples of companies that were straightforward miners. Even if they treated concentrates produced by others, it was on a toll basis. Their marketing staffs were less aware of the finer points of, say, trading on the commodity exchanges or other forms of hedging.

Today, in the light of the upheavals in currency rates that have occurred since the energy crisis of 1974, however, everybody's getting more sophisticated. There are a lot more people in the business of trading metals on commodity exchanges, and they are anxious to develop clientele. Thus mining companies are becoming much more sophisticated than was the case when I joined Asarco in 1946. They have much more knowledge of risks--price risks, currency risks, political risks, which are certainly with us to an enormous extent these days.

Swent: Yes. Those factors are much more important now, aren't they?

Strauss: Yes, they are. They're perceived, because in '46, when I joined, after all, most of Africa, much of Asia, was still colonial. The countries of South America had not yet exerted their political independence; they were dependent on foreign investors for capital, and they had not undertaken their own marketing or operation.

Swent: And the environmental costs were--

Strauss: The environmental question hadn't really surfaced in the way it did in the late sixties and early seventies.

The Devaluation of the British Pound; the Marshall Plan

Swent: Before we get into that, you just briefly touched on the Korean War. I'm assuming that was the first sort of crisis that hit after you joined AS&R?

Strauss: Well, no. There were a lot of interesting developments. One was the change in the status of the British pound, the relationship of the value of the pound to the dollar. For many years, it was almost taken for granted that $4.86 represented the value of a pound sterling. This was considered sort of immutable. It went through the period when the prices of gold rose from $20.67 an ounce to $35 an ounce, and it was still in place when the Bretton Woods Conference was held in 1994.

But it was clear in the postwar period that the effects of the war on the British economy, the debt that Britain had undertaken as a result of fighting that war, its changed position with regard to its empire--all of these things were undermining the value of the British pound. London, which had been the traditional capital of the world's financial structure, was gradually giving way to New York. So the pound dropped below $4.86. I think the drastic cut came in '48 or '49 to $2.80 a pound, and that really was a major process of readjustment.

It was just about that time also that the Marshall Plan was launched, and this began slowly at first, but eventually to change the complexion of the things.[1]

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[1]For more about the Marshall Plan and strategic materials, see Evan Just, *Geologist: Engineering and Mining Journal, Marshall Plan, Cyprus Mines Corporation, and Stanford University, 1922-1980*, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1990.

Swent: I was thinking the Marshall Plan was earlier than that, but I guess you're right, it was several years--

Strauss: Maybe late '47 at the earliest.

Swent: It was a few years before we got organized for that.

Strauss: Yes. It took time to get organized. But it began to really influence the markets and revive the economies of Western Europe, and somewhat later, the economy of Japan.

One of the most interesting things that happened was the change in the perception of the position of the United States. During the war, although we were in the war, we didn't suffer war damage to our industrial plant at all. There had been concern about sabotage, there had been concern about submarine attacks on both coasts, and there were a few efforts, but nothing that had any real consequence.

Shortcomings of the Paley Commission Report, 1951

Strauss: So when we emerged from the war, this country had two thirds of the world's monetary gold in its supply. It had 50 percent of the industrial production of the Western world, that is, outside the communist countries. So it consumed 50 percent of the raw materials. When the Paley Commission report came out in 1951, it had--

Swent: Let's just identify it; this was a report on strategic materials.

Strauss: The official name was the President's Materials Policy Commission. It was selected by President Truman, and it was headed by William Paley of the Columbia Broadcasting System, so it became known shortly as the Paley Commission. Their report published in 1951 analyzed the prospects, with respect to natural resources, not just minerals, but basic products such as lumber, cotton, for the world, over the ensuing quarter century, from 1950 to 1975.

And in the first volume of a five-volume report, there was this map showing that, with 6 percent of the area and I think 9 percent of the population--I may have gotten those figures reversed--the United States consumed 50 percent of all the raw

materials consumed. The Paley Commission then estimated what would be consumed in 1975, and although the percentages for the United States were shown as somewhat diminished, it was not a radical change.

In fact, however, a radical change did occur.

Swent: The Paley prediction was not--

Strauss: Was not correct, no. The actual consumption by the United States by 1975 was about 25 percent of the world total, instead of 50.

Swent: And yet, they're still quoting those Paley Commission figures.

Strauss: Yes, some people do.

The other thing was, the Paley Commission, after making its estimates of what the requirements for vital resources would be in 1975, expressed grave concern over whether those requirements could be met. They used the expression that shortages in the past had been met by price adjustments and proved temporary, but they felt that shortages in the future would be much longer lasting.

And they were quite wrong about that, because their estimate as to what might be produced was even more wrong than their estimates of what was going to be consumed. They underestimated the potential to produce by a substantial amount.

So this was already beginning to emerge in the immediate postwar period. One of the things that I think was most striking was that very few significant mineral discoveries had been made during the thirties. I think this conditioned the Paley Commission into thinking that most of the world's mineral resources had already been identified. They failed to recognize that you can't find things unless you look for them, and that exploration had been cut back very sharply, first by the financial stringency of the Depression, and second by the manpower demands of the war. So you had a period really from 1930 to 1945 when exploration was at a minimum.

But as price ceilings came off after the war and the prices started to respond, as companies began to show some confidence in the future demand for materials, and particularly as demand revived in the war-damaged areas of Western Europe and Japan, much more exploration was undertaken. We began to have enormous finds.

Swent: There were also these new technological developments, like the geophysical--

Strauss: Exactly. Just as I said the marketing has become more sophisticated, in the same way, the theories of geology have become much more sophisticated and people are no longer just looking for outcrops. They study soil contents and stream sediments, and they begin to understand that there may be significant resources which don't come to the surface.

Swent: Some of these I guess were spin-offs of war technology, too?

Strauss: That is correct.

Swent: Aerial maps.

Strauss: Right, true. I always think about the area south of Tucson, which the Geological Survey had dismissed as a potential source of copper, and now you have major mines, Sierrita and Mission, and others, which have been developed in that area, with deposits which did not come to the surface, did not outcrop. And yet, you have very significant copper resources.

This is a long way of saying that the Paley Commission had estimated that the United States' production of copper from its own mines at best by 1975 would be 800,000 tons of copper a year. Instead of that, it is currently running more than twice that amount, as a result of new discoveries in a country where people thought in 1980 that every copper deposit that could be found, had been found. It wasn't true.

The Korean War and Metals Markets: Copper and Zinc

Strauss: So these were developments that were beginning to emerge even before Korea broke out. When the Korean War started, there was a lot of concern that it might in fact develop into another world war, that Russia and China might come to the assistance of North Korea, and then we would eventually be fighting a world conflict again. So the government did slap on price controls. I think it was in--the war started in the middle of 1950, and the price controls came into effect in January of 1951. I believe I'm correct about that.

By that time, prices had already moved up substantially. Copper was twenty-four cents a pound, I think lead and zinc were in the mid-teens. These price ceilings were put into effect.

But to enforce them proved much more difficult than had been the case during World War II, because the Germans were busy buying lead and zinc and copper, the French were buying, the Italians were buying, and there was no way that we could say to the Chileans, "You've got to sell your copper to us at twenty-four and a half cents," when they could get much better prices in Europe.

In the case of copper, actually, a compromise was found, and the ridiculous position was developed that consumers were allowed to pay twenty-seven and a half cents for foreign copper but could only pay twenty-four and a half cents for domestic copper.

Swent: This was a government regulation?

Strauss: Yes, during the war in Korea. And scrap became almost uncontrollable. There was talk of putting on export controls on scrap, but in fact, they were not. And of course, the price offered by foreign buyers was higher than domestic buyers of scrap could afford. So the Korean War was quite different.

Swent: What was AS&R's position on this?

Strauss: We had to live with the regulations with regard to our domestic production. At that time, we were not significant miners of domestic copper. We sold a lot of domestic copper that we had smelted or refined for other people, although our biggest source of copper at that time was Kennecott. We ran the smelters; Kennecott ran the mines. But we returned the copper to Kennecott and they sold their own copper. So we were not huge copper sellers, but we were suppliers of refined copper.

Swent: Were you faced with the decision whether to sell abroad or to the United States?

Strauss: No, we sold our domestic copper in the United States, because we wanted to maintain the goodwill of our domestic customers, among other things. And because we were paying the domestic price to the miners that did ship to our smelters and refineries. So we were careful to sell at least that quantity of copper in the United States that we had purchased as the basis of the United States price.

The situation became very critical in zinc. In fact, zinc was considered to be one of the most difficult of all the raw materials during the Korean War. The prime minister of England at the time was [Clement] Attlee; he came over and visited Mr. Truman to see whether Mr. Truman would agree to let the British have some zinc out of the stockpile which had been created by

congressional law in 1946. But the law was very strict with regard to releases from the stockpile, and so nothing was done with the Attlee request. I think sulphur, elemental sulphur, was also on Mr. Attlee's list. There were four commodities; those are the only two that I recall at the moment that he was particularly concerned about.

Developing the Silver Bell Mine, Arizona

Strauss: Jim Boyd, who you've interviewed earlier, was then director of the Bureau of Mines, and I recall his asking me to come down to Washington to talk with him about what Asarco could do to increase copper and zinc supplies. I said, "Well, of course, we have some resources." Mr. Straus and Mr. Brownell had advised me to reply in this regard. "But they're marginal, and we don't know how long this situation is going to last."

"Well," he said, "you ought to do what you can to get them going." The outcome of that was that we did make a contract with the government to open the Silver Bell mine in Arizona. This had been discussed during World War II, but it was discussed too late, and it never materialized. Asarco agreed to equip and develop the Silver Bell mine to produce a minimum of 12,000 tons of copper a year in exchange for the government undertaking to buy two years' production from us at the ceiling price of twenty-four cents a pound. We went ahead with investing our own money, developed the mine. As I recall, by the time we got it going, the Korean crisis was pretty well over.

The other significant developments that occurred then were that the government arranged to loan money to Copper Range Company for the opening of the White Pine mine in Michigan, and to loan money to Newmont for the opening of the San Manuel mine in Arizona. Kennecott agreed to expand the production from its Ruth mine in Nevada, part of the Nevada Con[solidated] operation, in exchange for a contract similar to the one that we had. And Phelps Dodge opened the Sacramento pit at Bisbee, Arizona, also under a similar type of arrangement. So the government made two loans and four purchase contracts to expand copper production.

There were some deals made to expand zinc mine production. I think the ceiling price for zinc was seventeen and a half cents a pound. The steel companies were so concerned about zinc at that time that U.S. Steel made a contract with American Zinc, Lead, and Smelting, agreeing to a fixed price of seventeen and a half cents a pound for four years.

Swent: That's a long time.

Strauss: Before the four years had expired, the Korean crisis was over, the price of zinc had dropped. Howard Young, who was then the head of American Zinc, in a conversation with me told me that U.S. Steel said, "We'll live up to the contract, we signed it, and we'll pay you seventeen and a half cents, even though we can buy zinc much more cheaply. But we'll have to let you know that at the end of that contract, you're no longer our supplier." So they were really sort of blackmailed into agreeing to take a lesser price, even though they had a firm contract.

And that experience taught me something: don't make long-term firm price contracts with customers, because they may not live up to them, or if they do live up to them, they will threaten you with later discontinuing the relationships with them. Sell at the market price.

Swent: It's just too volatile to--

Strauss: Yes. Nobody can read the future with certainty. There are examples, of course, where firm prices have been offered and have been lived up to, the outstanding example being the uranium program of the AEC that you and I talked about, where they offered a price of, I think it was ten dollars a pound, for uranium concentrates.

Swent: That was again an artificial situation.

Strauss: That was an artificial situation, and it was a government which had a program and could have put this uranium in stockpile. They weren't in the competitive market as U.S. Steel was. U.S. Steel's point with Mr. Young was valid, and that is that they have to sell galvanized steel in competition with other people who were paying lower prices for zinc, so if Howard Young insisted on their paying seventeen and a half cents, they would be stuck, and so--. The firm price contracts are not what they're touted to be.

Well, this is a sort of disorganized discussion of the events in the Korean War. Early on--

Serving on the Defense Materials Procurement Commission ##[1]

Strauss: Early on, a gentleman by the name of John Weinberg, who was a senior partner of Goldman, Sachs and Company, and who had been called down to Washington to help the government recruit industry people for the Korean effort, asked me to come down to see him, which I did. He said he was aware of what I had done in Metals Reserve during the Second World War, and would I come back to Washington to undertake similar activities during the Korean War.

I explained to Mr. Weinberg the position of my wife, and that I really couldn't move her to Washington, and that I couldn't undertake to live away from her; she needed me to be with her most of the time. But I did agree to be a consultant and come down to Washington one day a week, which I did throughout the Korean War period. I was a consultant to something, I think the name was Defense Materials Procurement Commission, and it was headed by an Oklahoma lawyer by the name of Jess Larson, a very able gentleman. I would come down every Thursday, I think it was.

Swent: That must have been hard--by train?

Strauss: No. By that time, there was good air. I would fly down in the mornings and fly home in the evenings.

And there was an amusing incident as a result of this commuting of mine. It must have been about 1953. I had been in Washington with the DMPC during the day, and I was scheduled to return to New York on a 5:45 flight out of National Airport. Got out to the airport in time, and I'm standing waiting there, when along came a diminutive Chinaman named K. C. Li. Mr. Li is probably--was then probably--the foremost expert on tungsten in the world, and we had gotten to know each other very well during World War II. We saw a lot of each other, because he was very helpful in advising the government on meeting the procurement problems of tungsten and a number of the other alloying elements.

"Oh, Simon," he said when he saw me. "What fright [sic] are you on?"

And I said, "I'm on the 5:45."

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[1]For more on DMPC, see George Heikes, *Mining Geologist on Four Continents*, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1992.

He said, "Oh, I have a ticket on the 6:15. Let me see whether I can get on your prane." So he went over to the American Airlines counter. American then operated New York-Washington flights. He came back and he said, "No seats on your fright."

So I said, "I'm sorry. We probably could get on a later plane together, but my wife has made a dinner engagement for us in New York, and I'm anxious to get back."

He understood. We stood there chatting. There was an announcement over the loudspeaker that for some reason, the 5:45 flight was indefinitely delayed. So Mr. Li whipped out his ticket for the 6:15 flight and he said, "Here. You go on my prane. I am in no hurry. I can take later."

I said, "Thank you very much, K. C." I got on the 6:15, which left almost immediately.

In those days, the stewardess came around and asked you your name and destination, because most of the planes either went on to Albany or to Boston. So when she came to me, I had his ticket. I said, "Li," and "La Guardia," and of course, it caused no comment.

The next morning, Mr. Li called me up laughing. He said, "Simon, you know what happened? I got on your prane, and when the stewardess came around and asked me my name, I said, `Stlauss.' She looked at me, she said, `You don't look like Stlauss.'" [laughter] In those days, they used to have the name of the pilot and the flight attendants on the door leading to the cockpit, and he had seen that her name was Mulligan. He said, "Well, you don't look like Murrigan to me." [laughter]

And from that day on, I used to run into him frequently--his office was in the Woolworth Building not far from where the Asarco offices were--and we would occasionally have lunch together. Whenever we met, he would say to me, "You know me? My name Stlauss." [laughter]

Swent: Funny.

Strauss: So I was very much obliged to him for letting me have his ticket.

Swent: Well, you certainly don't look like Mr. Li!

Strauss: Not L-i, but L-double-e is a possibility.

Swent: No, you could pass for that, but not L-i.

Strauss: She didn't look at the ticket, she just heard the word.

Swent: So how long did this Defense Minerals--

Strauss: Oh, I continued to be their advisor for about three years, I think. And then it was replaced by an office of something or other based in the White House headed by a very nice gentleman named Arthur Fleming, and he asked me to continue, but it didn't involve going down once a week, just from time to time when they had problems with regard to the stockpile.

Swent: We're continuing now after a break for lunch. We had just finished your work with the Defense Minerals Procurement Commission. So we'll get back to what you were doing for AS&R.

Strauss: Right. After I took over from Kenneth Brownell as the vice president in charge of sales, my principal duties were not so much to do any selling myself as to ascertain what amounts of minerals we needed to sell and where to sell them.

Vice President in Charge of Sales

Swent: You were getting up into policy, in other words.

Strauss: That is correct. For each of the principal materials, we had a salesman with an assistant assigned to cover them. We had a copper salesman with an assistant, a lead sales manager with an assistant, a zinc sales manager with an assistant, a silver and gold salesman, and we had a byproducts salesman, who would have been responsible for disposing of bismuth, cadmium, antimony, selenium, tellurium, indium, and any other byproducts that were produced by the company's refineries.

Swent: Was there any question of expanding, say, to aluminum?

Strauss: We were not in the aluminum business.

Swent: You never ever got into aluminum?

Strauss: There was a lot of discussion about getting into aluminum, and at one point, when the Defense Materials plant facilities were put up for sale by the government--I had referred to the fact earlier that they had been built by Alcoa and that they had actually been operated during the war by Reynolds and Kaiser--after the war, the government wanted to dispose of these, put these plants, properties, up for sale. Asarco did bid on some of the aluminum

facilities in the Northwest in the hope of getting into the business. But the Kaiser organization outbid us, and so we did not get those plants, and subsequently we made no real effort to get into aluminum production.

A number of our competitors in the copper-lead-zinc business did consider doing this. Amax, the former American Metal Company, eventually became a significant producer of aluminum. The Anaconda organization went into aluminum production, but without any conspicuous success. Within Asarco, our feeling was that the amount of capital investment required to become a successful competitor in aluminum was very large, and we had many other uses for the capital available to us, so we never did really go into aluminum.

Abortive Efforts to Get Into the Nickel Business

Swent: Nickel was another thing that you--

Strauss: Yes. We made at least two efforts to get into the nickel business in which I played a part. One was the Thayer Lindsay organization that I referred to earlier, seemed to be receptive to disposing of its holdings in Falconbridge Nickel, the second-largest Canadian producer. Asarco took a very serious look at this. We made a bid. It wasn't high enough to interest the organization. There were no other bidders. And they finally decided to remain in the business. In a sense, it was too bad. If we had been a little more aggressive in going after it, because Falconbridge had a very sound business, and in the long run it would have been a profitable investment.

Swent: Were you involved in any of these decisions?

Strauss: Yes, because I was being consulted by top management as to the outlook for various metals. One of my jobs was to make projections as to what the future prices of metals were likely to be, what the level of consumption of metals was likely to be. I was very favorably disposed toward going into the nickel business, but here again, it would have required quite a bit of capital.

During the Korean War, the government made a real effort to dispose of the Nicaro nickel project in Cuba, which I mentioned earlier, and which I had visited. The Nicaro project had been closed down at the end of the Second World War. But with Korea underway, it was decided that perhaps it should be reactivated.

Bear in mind that this was in the period before Castro took over Cuba. Batista was then the ruler of Cuba.

Freeport approached us whether we would be willing to be a partner to bid for the Nicaro project. We had a lengthy consultation on it. We did a lot of work. One of Asarco's associate general counsels, a chap named Lyman Tondel, who later became a leading figure in the New York Bar Association, and I were assigned the job of dealing with Freeport, dealing with the government, deciding what our bid should be. We submitted a bid, but we were outbid this time by the National Lead Company, which went in in association with the Dutch firm of Billiton and Company. They succeeded in getting the contract to operate the Nicaro project from the government and with some kind of an arrangement under which they would eventually take it over.

However, a few years down the pike, Mr. Castro came along, the Nicaro project was seized as rightfully belonging to the Cuban people, and it has been operated since then by the Cuban communist regime. So those were our two real efforts to get into nickel, although we did have some joint exploration ventures with Freeport in Indonesia, but they didn't turn out too well.

Swent: You didn't ever get into sulphur?

Strauss: Well, bear in mind that all of our smelters were recovering quantities of sulphur in the form of sulfuric acid, so in a sense, we were really in that business. But we did not explore for sulphur, primary sulphur resources.

I remembered now, there was also a venture for exploring for nickel in the extreme north of Quebec in the area called Ungava. A sizeable deposit was located, but the economics did not look attractive. We did not go forward with that. I believe that now, some thirty years later, Falconbridge is making an effort to bring that property into production.

Swent: What about molybdenum?

Strauss: We became producers of molybdenum as a byproduct in our copper properties. In the 1970s, we had a major exploration program on a molybdenum property in Idaho, but that was in an area close to wilderness. The governor of Idaho, who later became secretary of the Interior, [Andrus] was not favorably disposed toward us, our operating the property, and we did not go through with that.

Investment in an Asbestos Deposit in Quebec

Strauss: One other commodity that we did diversify into and made a large investment, and for many years it was a successful undertaking, was asbestos. There was a deposit of asbestos under a lake in Quebec called Black Lake. The area around the lake belonged to the Asbestos Corporation of Canada, but they had not taken any steps to claim the land under the lake. A Canadian geologist by the name of Malouf did some drilling through the ice in the winter, determined that there was a sizeable deposit of asbestos under it, lacked the capital to bring it into operation, came to us as to whether we had any interest.

The people in the mining department asked me to do a survey of the outlook for asbestos, which I did. This was in the early 1950s. Asbestos was then a strong and growing industry. In particular, the demand for asbestos cement products was growing. Asbestos cement pipe was being used as a competitor of cast iron for water systems in major municipalities. Asbestos cement roofs and other construction of asbestos cement was going forward. Not so much in the United States as in tropical countries that lacked timber access, needed cheap materials, had plenty of cement on hand but needed the strength of asbestos to go ahead with it. It seemed to me that this was a growth industry. The traditional uses of asbestos for flameproofing, for insulation, for brake linings in automobiles all seemed like growth industries to me. So I urged the mining department to go forward with this, and--

Swent: There wasn't any talk of asbestosis?

Strauss: Not at that time. I shouldn't say there wasn't any talk; there was one professor who was already beginning to express concern, but he did not have wide support.

So the company made a deal with Mr. Malouf. We took over the property from him. We didn't pay outright cash; I think he was given some kind of a carried interest in it. It was necessary to convince the authorities in Quebec that what needed to be done was to divert the waters of the streams flowing into Black Lake and to relocate the state highways, to dredge the lake, redirect the flow of the waters, and get at the underlying deposit.

Swent: You were actually going to mine through the lake?

Strauss: Well, we were going to eliminate the lake--

Swent: Move the lake--

Strauss: Move the water. There would no longer be a lake. The lake would be the foundation for an open pit. Our mining people were very ingenious on this. We put a dredge on, because there was this oozy slime on the bottom of the lake accumulated over the centuries that could be better handled with dredging equipment than it could with shovels or other excavators.

Swent: How large a lake was it?

Strauss: It was sizeable, several hundred acres. Possibly comparable with Lake Mah Kee Nac that we're looking at at the moment.

In total, the investment was some $30 or $40 million. We got the property into production in the mid or later fifties, maybe '56 or '57.

Swent: No controversy from any environmentalists over moving the lake?

Strauss: No, not at that time. There was some opposition from the Asbestos Corporation of Canada, who had overlooked the fact that there might be a deposit there. But in general, the authorities in Quebec were very supportive, because there was high unemployment and this promised to create several hundred jobs.

Swent: And nobody in your company objected to this?

Strauss: No. We built a very modern mill, employed people with a lot of experience in asbestos processing, and eventually we got into production. As I said earlier, I did not anticipate that we would do much selling in the United States, but our sales agents outside the United States, who were already handling metals for us, some of them boned up on sale of asbestos and were eager to handle it for us. Others, who felt that they didn't know enough about the material, were less sanguine, and then we found other people to be our agents. We enlisted agents in Belgium, which was an important consuming area, Holland, France, Germany, and Italy. We had a sales manager, a French Canadian, who had previously worked for other companies in the asbestos industry, to be the sales manager in Canada, and he took care of any sales in either Canada or the United States.

Asbestosis and Environmental Overkill

Strauss: And the business was profitable from the start. It went very well. The market did continue to expand for a number of years until the concern about asbestosis became so rampant. I believe

that Asarco has now completely disposed of its interest in Lake Asbestos, but it was a successful investment. Unlike a lot of people, I believe that the concern about the medical effects of asbestos has been greatly overstressed. Certainly the workers in Quebec who mined and processed this material did not have the excessive experience with lung cancer that is supposed to have been.

Apparently, the greatest number of injuries were people in the brake linings business who had to cut, grind, and reshape the textiles containing the asbestos. Apparently, that brought out a lot of dust. And the people working in insulation with asbestos. For instance, it had been the practice when buildings were being erected to insulate the steel girders with asbestos.

The pluses of asbestos have been very much overlooked. Thousands of lives have been saved because of the effective use of brake linings to stop vehicles before hitting pedestrians or other vehicles. Thousands of lives have been saved in fires, because of the retarding effects of asbestos on the spread of flames. It's unfortunate that the material has gotten such a bad name. Above all, I think one of the most ridiculous and unnecessary expenditure of public funds has been the expenditure of billions of dollars to remove asbestos from school buildings in this country. Those dollars could much better have been spent to improve the level of education, to increase teachers' salaries. I have yet to hear of a single case of asbestosis that was contracted by a school child, not one. While I understand people's concerns with the environment, and I certainly agree that we should assure ourselves of a safe world, I think that asbestos is an example of environmental overkill.

Swent: Was a suit like the one at Johns-Manville ever brought against Asarco?

Strauss: Most of the suits against Johns-Manville, Eagle-Picher, and other companies, arose out of disease that was traced to exposure to asbestos during World War II. Asarco was not in business then, was not selling it then.

Swent: It was in the ships, wasn't it?

Strauss: In the ship insulation, particularly on naval ships where asbestos was used for insulating the electrical cable installations of the ship. That accounted for a large part of it. I think Lake Asbestos was named in some suits, and I'm not aware, because when I retired, up to that time there had been no major findings against Asarco. But the bulk of Lake asbestos was sold outside of the United States, and it's in the United States

that this explosion of asbestos litigation has occurred. Plus the fact that we got into the business when we did, Asarco did not have the kind of exposure that Johns-Manville, who had been in the business from the start, was really the initiator of it, and Eagle-Picher, who had been very active in the business during the war years. I think that helps to explain why Asarco has suffered less on this litigation.

Making a Biennial Study of Metal Markets

Strauss: Your questioning about these various other commodities and Asarco's interest in them reminds me, one of my major responsibilities at Asarco was to do biennial studies, that is, once every two years, of the metal markets. I had to try to get together as much information as possible with regard to the outlook for production, the trends of consumption, and what the balance would be between the two, and what the likely effect was on prices.

The principal purpose of this was to provide guidance to the exploration people in the mining department as to which metals they should particularly emphasize in their exploration, and to help them in their feasibility studies. Because when you are studying a potential new mine and you're trying to calculate whether or not it would be worthwhile to develop it, you have to make some assumptions as to the price you will get for the product of that mine.

One of the real difficulties is that when the deposit has first been identified, one can assume that it will take anywhere from five to ten years to complete the exploration, to equip it for production, to prepare the mine, to build the processing plants, and the result is that you're not really trying to forecast the price for the next month or the next year or even the next two or three years. You're looking down the road and trying to see what prices are likely to be five, ten, fifteen, or twenty years hence.

Swent: That must be so hard.

Strauss: Which is a difficult thing to do. But just to make this concrete, to show, the Mount Isa Mine, one of the greatest and most profitable metal deposits ever located, was found in 1923. It actually began production in 1933, ten years later.

VIII SOUTHERN PERU COPPER CORPORATION, 1959-1981

Development of the Toquepala Mine by Northern Peru Company, an Asarco Subsidiary

Strauss: Toquepala, one of the major mines of Southern Peru Copper Company, was first identified perhaps when the Spaniards arrived in Peru. The modern phase of exploration began in the early thirties, when the Cerro de Pasco Copper Company took an option on the Toquepala deposit, did some exploration work, identified the nature of the deposit--

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Swent: You were just beginning to discuss the Toquepala, Southern Peru Copper Corporation--well, it wasn't Southern Peru Copper Corporation yet, but the Toquepala project in southern Peru.

Strauss: That's correct. When Cerro de Pasco failed to make a deal for the property, the owner went to the Northern Peru Company--

Swent: Which was Asarco?

Strauss: Which was a subsidiary of Asarco, and suggested that Asarco might be interested. Asarco did a little exploration before the war, but during the war, that work was suspended. It was resumed in 1946. The outcome of the exploration convinced our people that we had a viable, major copper deposit in Toquepala.

By 1951, we decided to apply to the Export-Import Bank for a loan to help us develop the deposit. It was clear at that time that at least $100 million would be needed to develop this deposit, because it was located at an altitude of 9,000 feet in the Peruvian Andes, roughly 100 miles from the seacoast. The logical way to develop the mine was as an open pit mine with a concentrator there, and concentrates would have to be transported

down the mountains to the seashore where it would seem appropriate to build a smelter.

Swent: There were no roads going in there, of course.

Strauss: There were no roads going in. There was virtually no population in this arid, mountain area. The only sizeable community was the little fishing village of Ilo, which seemed appropriate for a smelter site if we went ahead. So it was going to be a huge investment, and while Asarco was happy at the time with the political situation in Peru, it did not have the resources to put up all of the cash required. It was clear we would have to borrow it from someone.

Requesting a Loan from the Export-Import Bank

Strauss: During the very early days of the Korean conflict, Export-Import Bank indicated it was receptive to making loans for development of additional copper production, and so the preliminary discussions were had with Ex-Im Bank. However, before these had gotten very far, the Korean crisis began gradually to look less ominous. The administration's eagerness for additional copper production cooled off somewhat. The fact that it would take a long time to build the facilities indicated slowed the negotiations down.

Then, following Mr. Eisenhower's election in 1952, he got a new secretary of treasury, Mr. Humphrey from the M. A. Hanna Company, I believe.

Swent: This is not Hubert Humphrey?

Strauss: No, George Humphrey. George Humphrey was not too sympathetic to the idea of lending U.S. taxpayers' money for construction of foreign projects abroad, and he declared a halt to any such loan.

Swent: Was the Ex-Im Bank still in your building?

Strauss: Well, I wasn't in that building any longer, but it was in the building that I had worked in during the war, yes. I had worked in that building in the war, but when I left the government, I didn't work there.

Swent: I was wondering if you had friends--

Strauss: Oh, I knew very well the former chairman of the Ex-Im Bank, a fellow named Warren Pearson, who had been chairman during the war years and with whom I'd had lot of negotiations. But Pearson had left the Ex-Im Bank. I knew some of the personnel there. But this was not an issue that was determined by who you knew; this was a major policy decision for any government.

So the negotiations were put on hold for a while. However, as the Cold War developed and other factors, and as Mr. Eisenhower had some interest in promoting better relations with Latin America, Ex-Im Bank indicated that perhaps they should resume discussions on this.

Because it was a major project, they sent their own engineers down to examine the deposit, to consider the advisability of the location of smelting facilities, whether a road should be built or whether a railroad should be built. Obviously, we needed some form of transport. And whether there was adequate water supply. It was a major undertaking in an area where there was no existing industrial activity of any kind.

Finally, we got an indication from the Export-Import Bank that they would be willing to put up between 50 and 60 percent of the cost of such a project if we were prepared to put up the balance. This created a very interesting situation, because up to that point, Asarco had had no experience in open pit mining.

Swent: By "we" do you mean you and Cerro together, or just Asarco?

Strauss: No, no, Cerro wasn't in the thing. They had turned the property down. We had the property.

Asking Phelps Dodge to Join the Venture

Swent: So it was only Asarco.

Strauss: Right. So the question was, without real expertise in open pit mining, what should we do? Roger Straus and Kenneth Brownell decided that we needed a partner with a lot of expertise. Two American companies were the obvious candidates. One was Kennecott, the other was Phelps Dodge, as a joint venturer with us in the Toquepala venture. We talked about it. There was one handicap with inviting Kennecott to be our partner, and that was that Kennecott was already operating a major project in Chile. Peru and Chile had fought a war in 1879, and while that war was long past, nevertheless the two countries were not overly

friendly. It seemed to us that to have a partner who was also operating in Chile might create problems.

For example, in the event of a severe recession in the demand for copper, if both properties were operating at normal rates, it might seem desirable to avoid flooding the market with copper, to curtail production somewhat. Where to curtail? If curtailed in Chile, the Chilean government will be upset. They'll be particularly angry if the Peruvian facility is running at full tilt. Vice versa, if output is curtailed in Peru, the Peruvian government will be unhappy. So it seemed to us that by including Kennecott there might be an unnecessary burden because of this latent hostility between Peru and Chile.

Therefore, Mr. Straus and Mr. Brownell went to see Louis Cates, who was then the head of Phelps Dodge. Mr. Cates was very interested.

Swent: Their headquarters were in New York also?

Strauss: They were in New York. Mr. Cates was very interested. He said, "I will send my engineers down to look at this deposit. I'll look at all of your data. I'm interested in being a partner." But he said, "I know that while you have been developing the Toquepala deposit, Cerro de Pasco and Newmont have had a joint venture to explore another deposit called Cuajone. I hear that they have had pretty good results."

Adding Newmont and Cerro de Pasco as Partners; the Cuajone Mine

Swent: And this was not far away?

Strauss: Twenty-five miles away. He said, "I think it would be a grave mistake to set up a situation in Peru like the situation in Chile, where Anaconda and Kennecott are sort of played off one against the other by the government. And that is likely to happen if Cuajone is actually brought forward by Cerro and Newmont."

Incidentally, we were well aware by this time that Cerro and Newmont had also approached the Export-Import Bank for a loan, but we had approached Ex-Im Bank earlier, so Ex-Im Bank said to them, "We're not about to finance two copper projects in Peru at the same time. We're working on a deal with Asarco. If that doesn't go through, we'll be glad to talk to you." But in

effect, "Asarco was here first, and we feel in all fairness we've got to take care of them."

So Mr. Cates said, "Let's form a joint venture with all four companies involved--Asarco, Phelps Dodge, Newmont, and Cerro. We'll go forward with the Toquepala project, because that's the one that has had the most study by the Ex-Im Bank. And the Cuajone project can wait down the stream."

Swent: Cates suggested this after investigating it?

Strauss: After the preliminary talk. He said it right at the outset. He said he knew about Cuajone, and he just didn't want to go further with us until this issue was settled. Well, you can imagine, we had four different companies headed by very strong-minded people. By that time, Bob Koenig was the CEO at Cerro. Malozemoff had just taken over as CEO at Newmont. Cates was at Phelps Dodge. Straus and Brownell were in Asarco. And these were all strong-minded people, and each one knew of reasons why his company was entitled to lead the venture. It took a long time to work out a deal.

Finally, a deal was worked out under which Asarco would have slightly more than half of the shares, because we had the commitment from Ex-Im Bank; because we would be the operators of the smelter, which was important; because we were prepared to put up the management for the construction of the plant. Cerro felt they had a very strong claim. They felt they had looked at Toquepala first. They had found Cuajone. They took about 20 percent. Phelps Dodge put in about 16 percent, and Newmont a little over 10. Those percentages have altered slightly over the years, but it's still roughly the basis of ownership of Southern Peru. So we went back to the Ex-Im Bank with this deal.

Meanwhile, the estimated cost of the project had increased, because it was clear that we should operate it at a somewhat higher rate than originally thought, which meant more capacity. Furthermore, if Cuajone was going to be available, you could exhaust the Toquepala mine more rapidly, because you'd have the other one to fall back on, which would use the same transport and smelter facilities as Toquepala would use. We were going to develop a major water source fifty-three miles away at a lake, Suche, at an altitude of 15,000 feet above sea level. We had to put in a pipeline to bring in enough water not only for the processing in the mill but for the community that was going to be built.

Building a Railroad and a First-Class Town Site

Strauss: So it was a vast undertaking, really. In today's dollars, it would probably have run a billion dollars. But the final figure came in at slightly over $200 million to produce 160,000 tons of copper a year, with a railroad rather than a haul road. Malozemoff argued strongly for use of trucks rather than rail. Phelps Dodge--

Swent: That is, to the port?

Strauss: To the port. Well, and we'd need a rail connection between the mine and the concentrator, which would be close by, but nevertheless, the transport--

Swent: But they used trucks in the mine?

Strauss: They used trucks on the levels of the mine, but as at Bingham [Kennecott's mine in Utah] at that time, the trucks emptied into rail cars and the rail cars went down to the concentrator. Bingham was in a sense a sort of a general model for this project. The smelter would be at the coast. We needed power plant facilities; that would be built at the coast. There was nothing: no electricity, no water, nothing.

It was enormous, in an area that had never had an industrial undertaking of any kind. And of course, we had to bring town sites. We had to provide facilities not only for the staff, that is, the professionals, but for the workers, both at the mine and mill and down at the smelter site, because the town of Ilo was a miserable collection of run-down fishermen's shacks.

Swent: We visited there in the early seventies, so I did see it. It was a very nice town site when they were through.

Strauss: You were both at Ilo and Toquepala?

Swent: We went to Toquepala, and Lang [Langan Swent] went down to Ilo, but I didn't get to Ilo. It was, I think, 1972.

Strauss: Yes. Which was before Cuajone was--

Swent: Cuajone was being--

Strauss: It was under construction.

Swent: But there was no camp there yet.

Strauss: The Cuajone camp is even better than the Toquepala camp.

Swent: I understand it is.

Strauss: And the medical facilities and schools--everything was far and above anything that the typical Peruvian worker was accustomed to.

Swent: First class.

Plato Malozemoff is Outvoted on the Transport System

Strauss: And the railroad was very efficient, although Plato may have been right, that we would have been better off with trucks. Nobody will know.

Swent: Why was he so much in favor of trucks?

Strauss: Well, because he felt that the rail facilities were sort of a permanent location. If you used trucks, if there was a problem with the road, you could have divergence. He just thought the truck transport would prove in the long run to be less expensive.

Swent: And he was outvoted?

Strauss: He was outvoted. That's to say, P-D had had operations with rail between their mines and smelters. For instance, they didn't truck their concentrates from Bisbee to Douglas; they shipped by rail. And of course, the interesting thing about it was that, this was very efficient rail, because the heavy traffic was from the mine down to the port. There was a lot of return traffic in the form of supplies and fuel and so on, but in effect, you were helped by gravity.

I often used to joke, some of the tees on the golf course at Toquepala were 9,000 feet above sea level. If you hit the ball right, it would roll all the way down to the Pacific Ocean. [laughter] And one of the interesting things about the project was the use of seashells to provide the lime that was required in the smelter. Did you know about that?

Swent: No, I didn't.

Strauss: There was a major mining operation of digging up the centuries of seashells that were deposited up the coast not very far from the smelter, to be used for the--

Swent: Lovely pure lime.

Strauss: --coquina.

Well, it was 1955 before all of this was hammered out, the money raised, the contracts placed for the equipment. Construction started late '55, early '56. The first general manager was a chap named Doerr who had been running one of the smelters in the United States. But some of the partners were dissatisfied, he wasn't pushing things aggressively enough.

Ed Tittmann, President and General Manager

Strauss: So in his place, he was replaced by E. M. Tittmann, who later became chairman of the board of Asarco, and he was a dynamo. Ed went down--Ed was the first president and general manager of Southern Peru Copper Company. The board consisted of six Asarco executives plus two representatives of each of the three other companies, and Ed Tittmann--a total of thirteen. We made it clear from the start that if the board of directors got involved in questions of marketing policy, we would run athwart of the Justice Department. They would say, "You are using Southern Peru as a way of collaborating to create price controls that might spin off into the U.S. market." So it was agreed by everybody that Asarco would handle the marketing of the copper.

Marketing to Satisfy Both the Department of Justice and Peru

Strauss: Originally, we were to produce blister copper in Ilo and ship blister copper to refineries in the United States or in Europe. Some of the partners wanted all of the blister to come to the United States. Phelps Dodge had a refinery at Laurel Hill, New York, in those days. Asarco had refineries at Baltimore and Perth Amboy, which were logical places to handle the blister. Neither Newmont nor Cerro de Pasco had refineries in the United States, but they had strong ties at that time with the American Metal Company, that operated the refinery at Carteret, and they made arrangements with American Metal under which any blister that was assigned to them by Southern Peru would be refined at American Metal's facilities.

However, I felt very strongly that some of the blister, perhaps the majority of the blister, ought to go to Europe. The

Peruvians would start to feel about Southern Peru, perhaps, the way the Chileans had felt about the Chilean copper that came up to the United States, was refined here, and fabricated by subsidiaries of the owning company in Chile. I felt that we should be selling blister in the open market. There were two large refineries in Europe. One was the plant at Hamburg, owned by Nord Deutsche, and the other was a plant at Olen in Belgium, operated by the Societe Generale des Minerais, or its affiliate, the name of which escapes me at the moment.

First of all, by dealing with these European refineries, we would get processing terms which could be considered arms-length terms. Whereas, if the blister were sold to the parent companies for treatment in their own refineries, or in the case of Newmont and Cerro, the Amax refinery, there would always be the suspicion on the part of the Peruvians that the charges for refining were excessive and dominated by the desire of the owners to earn profits outside of Peru from what was basically a Peruvian product.

So that broad policy issue was agreed to, but beyond that, it was agreed by all the partners, and as far as I know has never been deviated from, that the determination of the pricing methods to be used, where the sales are to be made when you have copper blister refined on a toll basis, so that the copper is returned to you for sale, that that determination should be in the hands of one of the partners, but not in the hands of the four. And since Asarco was the biggest partner, and also had the best sales organization in Europe--Newmont and Phelps Dodge had none, Cerro had a rudimentary sales organization, basically the sales representative of American Metal--so it was agreed that American Smelting and Refining Company would handle the marketing, and that was consistently the case until the military junta came to power and took over marketing. Currently Southern Peru has its own marketing department in Lima and in 1994 bought the government refinery in Ilo.

American Smelting and Refining Company appointed somebody in the organization on behalf of Southern Peru to negotiate the refining terms with the other partners, so that they would be uniform. We wouldn't allow Phelps Dodge to charge more than Asarco or Amax to charge more than Asarco or Phelps Dodge. We wanted uniform refining rates in the United States on the part of the United States partners. There may have been--

Swent: So some was sold in the States?

Strauss: Some was sold in the United States or converted on toll in the United States, but it did come to the United States. But for a long time, the bulk went to Europe.

Swent: How do you go about--is this sold through the commodity exchange, or direct--

Strauss: No. It may be sold on the basis of commodity exchange prices, but it's sold to consumers. The refined copper is sold to consumers. The price named may be the price prevailing, and here we're getting into a very vast subject. But it may either be the price prevailing on a given day on the commodity exchange--this is in Europe--or the average price for a month. I always preferred to sell on the basis of the average price. I don't think that you can pick specific dates. If you start picking specific dates, the customer will want the option of deciding which dates, and then you get into all kinds of controversy. So the average price for the month should be fair to both the buyer and the seller, and most of the copper has been sold on that basis.

Now, in the United States, there have been periods when the price in the United States has been quite different from in the world market. That has always been sort of a tangled question, because the Peruvian government obviously wants the best price. They don't care whether it's in the United States or in Europe, but they want the higher of the two, whatever it might be. In the United States, until after 1974, the domestic producers of copper selling to domestic consumers did not use commodity exchange prices. They nominated their own prices, which might be roughly the same as the commodity exchange prices, but at times were very different. We'll get into discussion of that issue subsequently when we talk about some of the price control issues.

The Toquepala negotiation was very lengthy, very difficult, but proved in the long run to have a quite successful outcome. Actual production started in the end of 1959. The first year of full production was the year 1960. Toquepala operated at all times at capacity. The tons of copper produced gradually retreated as the better grade ores close to the surface were exhausted and we got into lower-grade ores. The first few years, the material treated had a higher copper content than the average of the ore body, so the production gradually diminished from 160,000 tons--this is short tons--more or less--a year to the present level of 100,000 to 120,000 tons. There have been some labor strikes, but except for that, Toquepala has operated continuously at or close to capacity over all this period.

Swent: It's been a fantastic mine.

Strauss: It began in 1960. The bulk of the Export-Import Bank debt was retired within the first three or four years. I don't remember any longer, but I think the loan was either a fifteen- or twenty-year period. About $5 million of that debt was kept in place over the life of the contract simply because we wanted, in talking to the Peruvian government, to be able to say, "Well, you know, a United States government agency, the Export-Import Bank, is a lender to this organization, and we mustn't do anything which will get them too upset." Well, many things were done that did get them and got us upset, but that was some political developments.

Swent: So it was not taken over?

Strauss: No. After Mr. Tittmann returned to New York, which was about 1961 or '62--

Swent: Perhaps I was wrong about when I was there. I think we were there in '69.

Strauss: Yes. That was shortly after the military junta had taken over in Peru, '69. Well, whatever the case is, after Mr. Tittmann returned to the United States, the CEO of the operations in Peru was Frank Archibald, who had been with Asarco at the Tacoma smelter and elsewhere. He was a marvel at handling relations with the Peruvian government. It was largely because of Mr. Archibald and the advice of people in the New York office, principally Charles Barber and Alexander Gillespie, the general counsel, that Southern Peru steered a course of action which prevented the Peruvian government from taking over.

The Quellaveco and Michiquillai Mines Are Nationalized

Strauss: We did lose one property of Southern Peru, and we lost another property that Asarco had found in northern Peru. In addition to Cuajone and Toquepala, which were major ore bodies, during the exploration period after the war Asarco engineers had identified a third deposit in the general area called Quellaveco. Quellaveco was lower grade than either Toquepala or Cuajone, and it was somewhat smaller. There was over 200 million tons, however, of material running--

Swent: And in the same region?

Strauss: In the same region. To describe their locations, Cuajone is to the east of Toquepala about twenty-five miles. Quellaveco is about fifteen miles northeast of Toquepala, and about the same distance northeast of Cuajone, so they formed a sort of rough triangle. We identified the Quellaveco deposit, but we had no plans to bring it into production soon, because it was lower grade. It's a resource which we thought over the years would eventually be available, probably for treatment at the Toquepala concentrator when the Toquepala production began to ebb. The railroad would be extended up there, or a road would be extended up there, and the ore would be brought down and processed at Toquepala.

However, when the military junta took over in Peru in 1969 or '68--I think it was '68--they said that it was not appropriate for mining companies to own large deposits indefinitely. These resources belonged to the Peruvian people. If the companies were not prepared to go ahead with the development of those resources, then they would revert to the state. Rather than get into an argument about Quellaveco, we did say that we already were making studies about bringing Cuajone into production, but we were not prepared to invest money also in Quellaveco. So the government took over Quellaveco, and only within the last few months, they put it up for sale. Southern Peru made an offer for it, but was outbid by the Anglo-American interests through Minorco--you know that name?

Swent: Yes.

Strauss: Which already had property in Chile, the Mantos Blancos copper mine in Chile. So they now have the Quellaveco property and they're looking at ways to get it into production. I can anticipate that perhaps, because of the logistics, in the long run a deal will be worked out between Anglo-American and Southern Peru to make the transport facilities Southern Peru has, the water supply Southern Peru has, the milling capacity Southern Peru has, available for Quellaveco.

Swent: It would be logical, wouldn't it?

Strauss: Because it's the logical thing to do. It would be ridiculous to invest money in building a separate facility, considering the proximity of these deposits.

The other deposit in which Asarco had an interest (not Southern Peru) was in the north of Peru near the town of Cajamarca. It had the amusing name of Michiquillai. This, unlike the Southern Peru properties, is in an area that is farmed by the local Indians. There would be problems about displacing

them if Michiquillai was brought into production. It is fairly low grade, very large tonnage. Probably 500 million tons, but well under 1 percent copper. Asarco was not prepared to go ahead with that, particularly not with the political situation in 1968.

So the government took it over, said they'd find somebody else to develop it. Countless Japanese, Finnish, and other people have taken a look at it, but nobody has yet ventured to put up the huge sums of money that would be necessary. This is a very historic area in Peru, because it was at Cajamarca that the Spanish explorer Francisco Pizarro first met the Incas. It will be interesting to see what eventually happens to Michiquillai. But it's one of literally dozens of Peruvian deposits which contain substantial quantities of metal, but the logistics, the difficulties of transportation, the climate, other problems just--

The Quirivilca Mine

Swent: And as you mentioned, the political situation sometimes is even more important than the supply and demand.

Strauss: That is correct. However, as an indication of Asarco's ability to get along with governments that take over other people's mines, Northern Peru has continued to operate a small copper-lead-zinc operation up at the Quirivilca mine. What has actually happened there is that a minority interest, 20 percent, has been sold to private Peruvian investors. It seemed desirable to us to have a Peruvian investor in this small mine. But it continues to operate, it produces copper, lead, zinc, and silver. It has a substantial potential for expansion at some future date when the feeling is that this is an appropriate time to invest more.

Frank Archibald's Skillful Management

Swent: You might be a little more specific about what Frank Archibald did that was so skillful.

Strauss: Well, it was simply that he understood--first of all, he spoke Spanish well. He was originally born in Texas, I believe, but very close to the Mexican border, had a lot of business, I think lived for a time in Mexico. He understood the Latin temperament. A lot of Americans from a cultural standpoint don't understand

really how to deal with Latins. Frank did. He always had very good relationships, for example, with the military officers who represented the southern region of Peru. There was always a small army detachment assigned to Toquepala or Cuajone. He got along very well with them. He knew how to talk to the labor leaders without getting them offended, and with the local politicians. He kept in touch with the minister of mines, the minister of treasury, the people with whom the company had to deal. He never lost his cool. He never threatened. And he was well liked there.

When I was arranging the annual--the fiftieth anniversary celebration of the Copper Club last year, recognizing that Frank Archibald, who had since died, had been a copper man years and years ago, we managed to find a picture showing Frank being decorated by a general of the Peruvian army with the highest decoration that the Peruvian government gives to any foreign citizen. And this was after the junta had taken over and after the Cerro de Pasco operations and the W. R. Grace operations and Exxon's oil properties had all been taken over by the government.

Swent: That was a real compliment to him, then.

Financing the Cuajone Mine

Strauss: It was a compliment to him. Of course, one thing that helped a great deal was that when the junta came into power in the late sixties, we said we would go ahead with Cuajone. They knew they would have trouble raising the amount of money that was necessary to bring Cuajone into production, and so it was sort of a carrot that we were dangling in front of them. And we went ahead with it. The financing of Cuajone was very difficult, extremely complex, and quite successful.

Swent: It wasn't the same as Toquepala?

Strauss: No. First of all, we had to have $700 million instead of $200 million, not because it was a bigger project, but simply because inflation had changed the value of money in the interim. What was needed to bring in Cuajone were three principal investments. One was the development of the mine and the construction of the mill. The second was the expansion of the Ilo smelter so that it could handle twice as much material as it had. And the third was the extension of the railroad from Toquepala through the mountains to Cuajone.

In theory, there could have been a railroad built that would have gone from Cuajone directly down to Ilo down a different valley, but it would have meant that we had twice as much track to maintain and twice as much rolling stock, in effect. So instead of that, what was decided was to build a railroad from Toquepala to Cuajone, but there were intervening mountains, and I think something like two-thirds of that distance is tunnels. This was a mammoth engineering job, a huge investment, to dig those tunnels through the mountain. It's twenty-five miles, as I said.

Swent: But what mountains!

Strauss: And what mountains. And the experience, which I have had, of riding on the caboose of an ore train from Cuajone to Toquepala is quite interesting, because you're in the dark most of the time. But it's well worth doing.

Tailing Disposal and Other Environmental Concerns

Strauss: And incidentally, in the tunnel, there is provision for bringing some of the tailings from the Cuajone mill running in a ditch alongside the track over to Toquepala, where it joins the Toquepala tailings. Those are eventually disposed of in a riverbed which is dry most of the year. And they come all the way down the river to the mouth on the Pacific Ocean.

One interesting project: a nephew of Mauricio Hochschild, who is a very enterprising young man in the--he's not so young--but enterprising man in the metals business, mining business, in Peru, actually built a plant at the mouth of the river to recover copper concentrates, because the action of rolling down that mountain apparently creates sort of a natural concentration of the copper content of the tailings. The tailings, of course, carry some copper but not very much, when you consider that the ore originally only contained a little over 1 percent. Nevertheless, he recovered several thousand tons of copper concentrates a year from the tailings as they reach the ocean.

The fishermen in the area have had some problems with this. They think that the tailings have discouraged the fish. I understand that studies have indicated that on the contrary, the tailings raised the temperature of the water around the mouth of the river sufficiently so the fish congregate there that want to warm themselves. I don't know whether that's true or not.

Swent: Depends on which side you want to believe.

Strauss: But so far as I know, Southern Peru is still disposing of its tailings in that fashion.

Up to now, the Ilo smelter has had no facilities for the recovery of sulfuric acid from the smelter gases, most of which blow out to sea. There are some olive groves in the neighborhood of Ilo. That's virtually the only agricultural activity. But there have been complaints from them regarding the effect of the sulphur on their crops. So as a result of the general movement toward improving the environment, Southern Peru recently has arranged financing and will be recovering sulfuric acid at the Ilo smelter beginning, I suspect, within the next year or two.

Swent: What will they do with that?

Strauss: There is a large phosphate deposit which has not been actively mined in Peru, and it's thought perhaps the outcome of that is that the acid will be used in part for fertilizer. But there is another outlet, and that is that as a result of installing this facility for producing acid, Southern Peru is going forward with plants at both Cuajone and Toquepala to recover copper by the SX-EW [solvent extraction, electro-winning] process which requires sulfuric acid.[1] So there will be some internal use of the acid. The acid will have to be shipped back up to the mines where it will be used--the process involves dumping copper ores with oxide content and trickling acid through those dumps and precipitating copper.

Swent: So that would be a change in the technology up there.

Strauss: Yes. Well, it will provide additional copper that is not now being used.

Swent: Mr. Hochschild will lose out.

Strauss: Well, no, because it isn't the tailings that will be used. This will be used for the waste material which previously went on the dump because the copper content was too low or too oxidized to justify milling.

Swent: I see. So this is solvent-extraction, electro-winning.

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[1]See Wayne Hazen, *Plutonium Technology Applied to Mineral Processing; Solvent Extraction; Building Hazen Research; 1940 to 1993*, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1995.

Strauss: Yes. As you probably know, in the United States, for instance at the Morenci Mine currently, Phelps Dodge is producing more than half of all the copper it produces by SX-EW. That process has grown like wildfire in the last ten, fifteen years. And I'm sure we will see a lot of expansion of SX-EW operations in Latin America. They've been virtually unknown there. They're just coming in to focus in Chile, and there will be many more.[1]

Swent: That will be a happy solution to the problem, then.

Strauss: Unless it so overburdens the copper market that the price goes to the bottom. [laughter]

Swent: There's always a problem in marketing, isn't there?

Strauss: Yes.

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[1]See Robert Haldeman, *Managing Copper Mines in Chile: Braden, CODELCO, Minerec, Pudahuel; Developing Controlled Bacterial Leaching of Copper from Sulphide Ores; 1941 to 1993*, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1995.

IX VICE PRESIDENT IN CHARGE OF SALES, 1949-1973

The Complexity of Pricing and Maintaining LIFO Inventory; Asarco is the Industry Pioneer

Strauss: So a good deal of my time was really, other than just supervising what the sales policy of Asarco should be with regard to its own production, a good deal of my time was spent on projects like Lake Asbestos and Southern Peru. But one of the important things that anybody handling sales policy for a custom smelter has to do is he has to keep one eye always on what the custom smelter calls intake. That is, the amount of metal that the smelter is buying. In Asarco's case, that's determined month by month. We try to estimate how much material will be arriving at our smelter, let's say, in the month of June.

If the contract for the purchase of that material specifies that we pay for the copper contained in the concentrates at the average price for the month of June, we try to calculate how much that quantity will be, for each of the mines that ship to us. Whether they are our own mines, that is, Asarco's own mines, or whether they are mines belonging to someone else. Because the smelters and the mines, even though owned by the same company, have to deal with each other at arm's length on this for many reasons, one of them being tax purposes. When a U.S. company claims the depletion allowance, it has to be based on an assumption as to what the value of the copper is in the material as it leaves the mine and/or mill, because really the mill is considered by the IRS as part of the mine. So you have to know what the value of the concentrates is.

Theoretically, if an organization owning a smelter wanted to exaggerate its depletion allowance claims, the smelter would pay a lot for the concentrates and keep very little for its own processing charge. That would mean that the value of the

concentrates would be higher, and the 15 percent depletion allowance would apply against the large amount.

On the other hand, if the smelter operator wants to make a big profit, of course, he charges a lot for the processing of the ore. So the IRS looks with great care at the contract between, let us say, the Mission mine belonging to Asarco and the Hayden smelter belonging to Asarco. What is the transfer price between the Mission mine and the smelter--is it too high or too low, or is it right? The tendency is by custom smelters, such as Asarco, to apply the same processing charges to its own mines as they apply to an outside shipper. Let's say that Phelps Dodge is shipping some concentrates to the Hayden smelter, which has happened from time to time. Well, Phelps Dodge is going to negotiate the highest price it can, and of course, Asarco is going to try to charge the highest fee it can. They eventually arrive at a deal. So that arrangement has been arrived at as the result of two people serving their own self-interest arriving at a negotiated price.

Consequently, if the Hayden smelter charges the Mission mine the same processing fee as it has charged Phelps Dodge, that tends to satisfy the tax people that it's an appropriate charge. I've gone into great length to explain that to you, but it is a very important part of the custom smelting business.

But the most important part from the standpoint of the sales department is not that we sell a lot, but that we sell everything for which we are paying that month's price. In other words, in the month of June, the best thing to do is to sell as much copper as we are buying in the month of June. We try to balance it; we neither add to nor subtract from inventory. If we sell more, if a customer comes in and pleads with us he has to have more, if we sell more to the customers than we are buying from the suppliers, then the next month, if the price of copper has gone up, we have lost.

Because at the end of the year, the effort is always to have the same inventory on hand that the smelter had at the beginning of the year. If the smelter has a different inventory, if it has more inventory on hand at the end of the year than it had at the beginning of the year, then the stockholders have more capital tied up. If there is less inventory on hand at the end of the year, that means a sale out of what Asarco has called its "iron" inventories, that means the inventories necessary to carry the business. Because a smelter can't run the business with no inventory. There's always material going through the plant. It takes three months, roughly, from the time concentrates arrive at a smelter before refined copper is sold from the refinery. That

three months is roughly equivalent to the inventory that the company has to be carrying.

Some of the inventory carried by a custom smelter such as Asarco may in fact date back on a cost basis as far as the pre-war period during the Depression. There may be some copper that is on the books at nine cents a pound, because that was the cost when the inventory was first put into place. Under the LIFO method--last in, first out method--of inventory, if in a given year Asarco has sold more copper than it purchased, that excess is deemed to have cost Asarco whatever price it is carried on the books, and the company pays income tax on that profit. Let's say that the copper was bought at fifty cents a pound and we sold it at eighty cents a pound. That's thirty cents a pound of profit, and you pay 30 percent or whatever the tax rate is in income tax. It can be an extremely expensive thing to oversell, for somebody who's in the custom smelting business and uses LIFO.

Swent: I read somewhere that when Asarco had made this LIFO inventory it was a big breakthrough, that they were the first ones--

Strauss: They were among the first to use it in the industry.

Swent: Were you involved in this change?

Strauss: No, this was before I came with the company. Asarco's inventory situation is watched by the management like hawks.

Swent: But this was in place before you came in?

Strauss: Yes. The procedure was in place. I got to know all about it in talking with the controllers and other people in the tax department. So it was almost the first thing when I was recruiting young people to come into the sales department which really surprised them. I said, "Don't expect me to pat you on the back if you sell more than our target figure for the month, because it could be very expensive for the company for you to oversell. And on the other hand, I'm not going to pat you on the back either if you sell less than we have taken in for the month. What we try to do each month is to sell the amount of material that we are pricing each month. It's like walking on a tightrope to do this. It's a juggling act."

Now, some things can be done to balance the books if we oversell to please a customer. We can perhaps go to the commodity exchanges and buy back an equivalent amount at the same price that we have oversold, if we had the physical metal and it makes the customer happy. But these are the finer points of sales management that one has to deal with. As you will recall

that I commented, I think it was yesterday, that in effect, the custom smelting business requires a greater degree of sophistication than just a company that is a straight producer. This is one of the reasons, the fact that you're constantly looking at the cost of materials on hand month by month and year by year.

Swent: Fascinating.

Strauss: Yes, it is.

The Foreign Sales Representatives: a Superior Network

Strauss: So we had a very good sales organization at Asarco, in my judgment. The individual commodity managers were good. But what I took the greatest pride in really in many ways was the skill of our foreign sales representatives. When I assumed the sales responsibility, all Asarco's Mexican production was sold abroad, and it was very large in lead and zinc, small in copper, very substantial in silver. We were also selling some material for Peru, and eventually this other Peru sales problem came along. At times Asarco's sales representatives might be selling under instructions from Southern Peru management or from Mount Isa management; in effect the sales agents in the major European countries represented not just Asarco, but Mount Isa, Southern Peru, the Mexican operations after Mexicanization, which happened in the late fifties, early sixties, when the control of Asarco's Mexican properties passed to Mexican investors and Asarco became a minority stockholder.

Nevertheless, for a long time, the marketing operation continued under the general guidance of the New York office, and the--

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Swent: You were just discussing your foreign marketing staff that you were so pleased with.

Strauss: Yes.

Swent: And in Mexico, just for the record, what were the operations?

Strauss: Well, the smelting operations, the lead smelters were at Chihuahua and San Luis Potosi. The zinc smelter was at Rosita in the state of Coahuila. The copper smelter was in San Luis

Potosi, and the lead refinery was at Monterrey. The significant mines were the Parral and Santa Barbara mines in the state of Chihuahua; the Charcas mine, which was in San Luis Potosi; the Taxco mine, primarily silver, but some lead and zinc, which was south of Mexico in the state of--I can't recall.

Swent: Guerrero, I think.

Strauss: We had a copper operation in a place called Michoacán. Later, a very substantial zinc-lead-copper mine was developed at San Martín, which I think is also in Chihuahua. So the operations were quite widespread through Mexico, and actually, when Asarco was operating 100 percent in Mexico, there were more employees in Mexico than there were in the United States. Well, the productivity wasn't quite as great. Many of the properties down there were less mechanized. They tended to be underground, highgrade operations where you needed a large number of people.

Swent: They've been there a long, long time.

Strauss: Yes. The Taxco, Parral, and Santa Barbara mines dated back to the days when the Spanish first arrived in Mexico in the sixteenth century. So they were old mines, but very productive.

I would like to revert to the question of the [sales] agents. Prior to the war, Kenneth Brownell had made a close arrangement with an outfit in London called Metal Traders, Limited. Metal Traders was a ring-dealing member of the London Metal Exchange. It was headed by a gentleman named Frank Baer, and his number-one assistant was Walter Stern, both extremely capable operators on the London Metal Exchange. A third part of the organization was Brigadier Henry Crosland. The brigadier was the financial man and the one who exercised caution on his somewhat more speculatively-minded associates.

Roger Hecht in Brussels

Strauss: Through Metal Traders, Kenneth had made the acquaintance of a gentleman by the name of Roger Hecht in Brussels. Although Belgium is a much smaller country than Germany, France, or England, in fact Belgium has traditionally been a center of metal trading. It was important to have somebody in Brussels to keep an eye on the market.

Hugo Haines in Germany; Rene Dieppedalle in France

Strauss: In Germany, through Mr. Hecht, the contact was a chap named Hugo Haines. Hugo had worked in Brussels with Hecht before the war, but after the war, he was in the city of Cologne. In France, the traditional representative for many years for Asarco--directly, not through Metal Traders--was a gentleman named René Dieppedalle. He was a wonderful character who wore the same kind of hats that Buster Keaton used to wear; I think they call them porkpie hats. He spoke virtually no English, and dealing with Mr. Dieppedalle helped to develop my French enormously.

Giovanni Vaciago in Italy

Strauss: In Italy prior to the war, the agent for many years had been Giovanni Vaciago. He was a gentleman primarily in the textile trade, then he had suddenly developed an interest in metal and he had worked not only with Asarco but also with Kennecott since the time that the Braden mine was brought into production in about 1916 to 1917. He was a wonderful gentleman.

Torsten Johnke, Sweden; Harald Astrup, Norway; Prosper Franck, Switzerland

Strauss: So this was the network that I inherited from Kenneth Brownell. It became clear to me that we needed additional people. We found a chap in Sweden named Torsten Johnke, and in Norway a gentleman called Harald Astrup. Oh, I overlooked one who was inherited from Kenneth Brownell: in Switzerland, in Basel, our agent was named Prosper Franck.

When I joined Asarco in 1946, and in spite of my wife's problems, I managed to find three weeks when I could go to Europe with Kenneth Brownell to visit London, Brussels, and Paris. Those were the three places that we went, and we met with many of these gentlemen there. Thereafter, I developed the procedure of going to Europe once a year to meet with our agents. For a long time, I made an individual trip around the circuits. I would not go to the smaller markets like Norway or Switzerland every year, but I would make it my business always to go to Brussels, Paris, London, and either Frankfurt or Cologne in Germany, and Milan in Italy.

Roger Hecht died quite unexpectedly in 1957. I had to find somebody to run the Brussels office in his place, because by that time, Hecht had changed his association. He was no longer an employee of Metal Traders but worked directly as Asarco's agent. He maintained contact with Metal Traders. There was a chap in Hecht's office who carried on for two or three years, but he was an older man, not very quick, and anxious to retire.

International Metal Company of Belgium; Jean Cortier

Strauss: So I looked around, and in Holland I found a Belgian named Jean Cortier who was employed by a Dutch trading firm. He was one of the best contacts I ever made in regard to personnel. I persuaded him to move back to Belgium, which he was very glad to do, and to take over our office in Brussels. By that time, we had incorporated it as the International Metal Company of Belgium, and he was a direct employee of Asarco's. He was more or less the command center for our European sales operations.

Swent: Did the Common Market influence you at all?

Strauss: Yes.

Swent: Because Brussels was the head of that.

Strauss: Exactly. Brussels was neutral. One of the problems of having our central office in a large market like Italy, France, or Germany on the Continent would have been that whoever was the agent there would have wanted in times of shortage to take care of his home customers as much as he could. I wanted a fair distribution of sales, and to maintain good contacts with all of our European customers. By having the office in Brussels, since we sold little material directly in Belgium, it was possible to administer the program in an equitable fashion. Actually, the Brussels office took care of the Dutch market as well as the Belgian market, since as you know, Belgium and the Netherlands are both part of Benelux. We had an excellent customer in Holland, the cableworks at the town of Delft, which was probably Asarco's most faithful customer over the years.

An Unfortunate Incident in Copper Marketing in the Early 1960s

Strauss: About 1964, we had to make a change in our arrangements with Metal Traders in London. An unfortunate incident occurred, which was not Metal Traders' fault, but it made it clear to me that to continue to use Metal Traders as our principal agency for sales even in the United Kingdom might lead to unfortunate consequences. Let me explain, because it shows the problems of public relations at a time of shortage in metal supply.

The copper market was very tight at the time that this incident occurred. Prices were high, consumers were screaming for additional supplies, producers were turning out every ton of copper they could, but they still couldn't satisfy the demand. Mount Isa unfortunately went on strike. The unions felt that this was a good time to improve their trading position. And as a result, there was a severe shortage of copper metal in Australia, because Mount Isa was by then the principal supplier to the Australian market. It was necessary for the Australian consumers to go into the world market and import copper.

A shipment of Tacoma copper arrived in Australia. Immediately, the union seized on this to say that Mount Isa was being instructed by the New York office to be intransigent in settling the strike in order that New York could sell copper at high prices to Australian consumers. The facts were that that particular shipment of copper had been sold by the New York office of Metal Traders. It represented copper that we had smelted on a toll basis for a Philippine copper mine which shipped to the Tacoma smelter, and was entitled to get the copper back as refined copper. This Philippine mine employed Metal Traders in New York, as they had every right to do, to sell their copper for them. And Metal Traders, not thinking about the strike at all--and I don't blame them in the slightest--they knew there was a good market in Australia, the prices were high. Tacoma was the place from which you could ship copper to Australia much better than to ship it from Europe, so they sold the copper there.

The union screamed bloody murder, the Australian government got very upset that Asarco was encouraging Mount Isa management to continue the strike. So I went to the Metal Traders people in London and I said, "I'm terribly sorry about this; this whole thing is a misunderstanding resulting from an innocent transaction on your part, but it's very embarrassing for us, and I think that we cannot continue to have the same relationship with you as we have had. We are going to have to open our own office in London."

Well, when I said our own office, it was really going to be Mount Isa's office in London. They were already having their lead refined in England, and they had a small sales organization, but it was necessary to expand that. So from that time on--

Swent: And this was when?

Strauss: This was in the early sixties, at a time of high copper prices. It was an unfortunate example, but it shows how people extrapolate from a set of circumstances, and how innocently you can create an impression of trying to control the market. But it also indicates how complex the business of marketing metals can be, because the unions were watching Mount Isa like a hawk. The strike was eventually settled. Actually, Mount Isa's labor relations since then have been quite good. They have had the occasional slow-down or work stoppages, but not to any great extent.

The union then believed or at least claimed that New York dictated the labor policies of the Mount Isa organization in Australia, which of course it didn't. It was strictly the responsibility of the management to deal with the union as they saw fit. While I was at Asarco there had never been an Asarco person on the board of Mount Isa, even though at one time we owned more than 50 percent of the Mount Isa shares. We've always given the Mount Isa management--"we", I should say, Asarco--had always given Mount Isa management its head.

Swent: But you've done the marketing for them.

Strauss: We did some of the marketing for them, but as the years have passed, that too has disappeared and Mount Isa now markets pretty much on its own. They still use some of the same agents that we --that Asarco had used. I keep saying "we"; I am no longer part of Asarco. I shouldn't be using that, and when we edit the text, maybe we'll make changes, because I don't want to offend my friends at Asarco by presuming to speak for them.

Swent: Well, but you're talking of times when you were.

Strauss: When I was in a position, yes.

So it's very tricky, when you have foreign investments. I gave you the examples of Peru and Australia. Mexico is equally sensitive. One always has to bear in mind what it is that the local government perceives, not necessarily what the facts are, but what their perceptions are of the facts. Just like the Chileans had a perception about Anaconda and Kennecott that was, in my opinion, quite mistaken. It was equally true with respect

to Mexico. Time and again, something that had been done in the best of faith was misinterpreted in Mexico as to be something to benefit the New York office and harm the Mexican employees or partners. It's one of the handicaps of an operation outside the country.

Organizing the Mt. Isa Sales Office in London

[Interview 3: August 25, 1994] ##

Swent: This is Thursday now, August 25, and we're continuing the interview. You said that you wanted to say a little bit more about your international marketing system, or people.

Strauss: Yes. As indicated, we came to the decision, with some reluctance, that we had to break the tie with the Metal Traders organization in London. Mount Isa mines undertook the organization of a sales office of considerably greater scope than they had previously had. Their previous office had really limited itself to the sale of lead and silver within the United Kingdom.

The chap that was in charge of this was a man named Henry Sewell with whom I had excellent relations. William Foster was the senior person representing Mount Isa in London. He was a member of the Mount Isa board of directors. He and I recruited for the London sales office two people out of the Metal Traders organization, with the full understanding and consent of the Metal Traders people. These were a chap named Richard Toller, who had handled matters relating to copper, and another one named John Bendit, who would be responsible for lead sales. They continued to be responsible for the sale of these metals during the entire balance of my career with Asarco, and they were extremely capable.

Changes in the French and Italian Offices

Strauss: Two other significant changes occurred. One was that Mr. Dieppedalle in France was getting older and needed a junior partner. He found an exceptionally capable young man named Claude Seailles. Claude had worked in procurement of copper for the French government, was very familiar with the market, spoke

excellent English, unlike his senior partner, and proved to be an outstanding addition to our group.

Finally, in 1959, I had to have a chat with Mr. Vaciago, our Italian agent, because in addition to representing Asarco, he was also selling copper in Italy for Kennecott. With Southern Peru coming onstream, it did not seem advisable to have one agent selling both Peruvian and Chilean copper in Italy, simply because the governments back in South America might be suspicious that he was favoring one country over the other.

He recommended, and I accepted his recommendation, that we consider engaging his son-in-law, whose name was Prince Fabrizio Ruffo di Calabrias. Fabrizio was a most engaging person, a former pilot in the Italian Air Force. His sister, Paola, was one of the reigning beauties of Europe and had married Prince Albert of Belgium just shortly before Fabrizio joined our sales organization. As a consequence, we found ourselves at times involved in aristocratic preferences [laughs] on the part of our customers. People in Italy almost scrambled over each other in an effort to do business with Prince Ruffo.

But he did not simply take advantage of his social connections and his prestige. He turned out to be an extremely effective trader, particularly in copper, but also in other metals. He did a fine job in the sale of asbestos.

Annual Sales Meetings on the Continent

Strauss: So by the early sixties, we had an exceptionally well qualified group of people representing us in Europe, and it struck me that instead of meeting individually with them in their home countries, it would be appropriate to organize an annual sales meeting somewhere on the European Continent. Over the years, the meeting places varied between London, Paris, and Brussels basically. We would spend two or three days together. Many of the agents brought their wives to these meetings, and so, for that matter, did our English associates who represented Mount Isa. The marketing people from Southern Peru and our Mexican operations were invited to join us. So we had a truly international meeting.

Swent: Were you the chairman of these meetings?

Strauss: I was the chairman of the discussion of the state of the metal markets. But it was a very useful exchange of ideas, and since

many of these people did business in other fields unrelated to Asarco, they formed sort of a brotherhood and found it was very advantageous to have the opportunity to meet their colleagues from the other countries. I'm sorry to say that I believe over the last few years this has sort of died down. Mount Isa and the Mexicanized group, which I will discuss later, tended to want to go their own ways, and this practice of having an annual sales meeting I believe no longer takes place. But while I was responsible for Asarco's marketing, we did have the meeting every year, and it was a stimulating occasion.

Swent: Must have been.

Strauss: The proceedings were basically in English, but there was a good deal of French, German, and Spanish around the fringes of our sessions.

Swent: What languages are you fluent in or capable in?

Strauss: I speak good Spanish and reasonable French. My German is quite inadequate.

I mentioned earlier that our Swiss representative was Prosper Franck. In the late sixties, unfortunately, Prosper died, and it was necessary for us to find another representative in Switzerland. However, I happened to be in Geneva attending a meeting a few months after his death, and I persuaded John Bendit from England and a Mount Isa marketing man, John Morgan, from Brisbane, to go with me from Geneva up to Basel to talk to Mrs. Franck and explain to her why we felt we had to do business otherwise, since she was unfamiliar with the business, and I think would have been quite incapable of carrying on.

Mrs. Franck turned out to be a very nice little lady, but she spoke no English and only fragmentary French.

Swent: Was she in business with her husband?

Strauss: No, she hadn't been really, but I felt that, her husband's business having ended, that I owed it to her to talk to her.

Swent: He had no associate who would naturally take over?

Strauss: He did not have any really. He had had one, but that gentleman had died earlier. So we really needed to find somebody else, but first of all, I thought it was appropriate to pay sort of a condolence call, but secondly I wanted to make sure that she was happy and understood what we were doing.

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Strauss: In Switzerland, it's customary for a lawyer who specializes in estate matters also to be an accountant, and fortunately, Mrs. Franck had an accountant who spoke splendid English, and also French as well as German--Basel, you know, is in the German-speaking part of Switzerland. Nevertheless, I felt I owed Mrs. Franck an apology for not being able to speak German with her, since she spoke no English and very little French, and I said to her that really the only German word I knew well was *Constantinopalischendudelsacpfeifer* [laughter]. This means, "a bagpipe player from Constantinople." I said I found it difficult to work that into our conversation. She was very amused when her accountant translated for her.

A few months later, I got a letter from my friend John Bendit in England who had listened to this, and he said, "I have found another word for you that is the equivalent to *Constantinopalischendudelsacpfeifer*," and I'll spell that out for you.

Swent: Yes, I'm not attempting that.

Strauss: He said, "It's *Hottentotenpotentatentantetotentater*." What that means is "the assassin of the aunt of an African chieftain." As a consequence, I now feel that in the event an African chieftain's aunt is assassinated by a bagpipe player from Constantinople, [laughter] I can describe the situation in full. Which, of course, is a side remark and has not too much to do with Asarco's business.

Swent: That's one of the problems with the German language.

Strauss: Yes. But we did have a very smooth working organization in Europe.

Agents in Japan and Latin America

Strauss: In Japan, which was also a market for Asarco and particularly for Mount Isa, we were represented by the local office of Metal Traders. It did not seem to us that any of the types of conflict that had troubled us in Australia would arise by continuing this association. In fact, the Japanese were not large buyers of metal. They preferred to buy the raw materials, the ores and concentrates, rather than metal. So it was not a major market for us, but we did want to keep in touch with the Japanese

situation, particularly in view of the significant expansion of the Japanese consumption of base metals and the severe competition which Asarco was undergoing from the expansion of Japanese smelting and refining capacities. So it was important to have a listening post in Japan.

In Latin America, there were a number of agents representing us in Brazil and in Argentina, but the volume of consumption of refined metal in those countries for the most part was not large. The Brazilian market grew rather rapidly; the Argentinean market was more or less static, because their economy was not expanding.

Swent: Did you have to make any commitment to provide a certain amount to Peru?

Strauss: No, because in Peru, in addition to Southern Peru Copper, the Cerro de Pasco organization operated not only mines and smelters but had a lead refinery, copper refinery, and a zinc smelter, and they were fully able to take care of the very limited consumption of metals in Peru.

In Mexico, however, the Mexican organization had very substantial sales of both lead and zinc to domestic consumers, and that was handled out of the Mexico City office. I would go to Mexico once a year to confer with the gentleman in charge, who first was somebody named Lott Taylor and later Walter Hurley. They did a very conscientious and good job of taking care of the Mexican market.

Swent: Didn't have Mexicans doing it?

Strauss: Yes, they had Mexican assistants, and eventually when the company became thoroughly Mexicanized, the American employees retired and were replaced by Mexicans.

X THE EFFECTS OF NATIONALIST MOVEMENTS IN THE 1960S

Bolivia Nationalizes the Tin Mines

Strauss: This is an appropriate time to talk about not only Mexico but about the whole trend of nationalism that developed in the sixties. The first of the Latin American countries to expropriate foreign or even domestically owned mining properties was Bolivia. In the early 1950s, the Bolivian government took over the holdings of what were called the three tin kings of Bolivia, namely, Patiño, Aramayo, and Mauricio Hochschild. Patiño and Aramayo were Bolivians, although Patiño's company shares were actually traded on the New York Stock Exchange, so that there were some American shareholders. The leftist government in office at the time of the nationalization felt that the mines were being mismanaged and that the profits were not being made available to the impoverished Bolivian population, so they took these mines over.

Parenthetically, one might say that Bolivia's tin industry has always been somewhat marginal, although it's the chief earner of foreign exchange for that country.

A government corporation called Comibol was formed. The labor unions were able to enforce demands for increased wages, enforced staffing, which resulted in many thousands more workers being employed than was really necessary. As a result Bolivian costs rose sharply and Bolivia was constantly pressing the International Tin Council of which it was a member for higher and higher floor prices on tin. I won't go into the details of that, because it's a very involved story. So this was the first step.

Nationalization in Cuba, Africa, Indonesia, Latin America

Strauss: By 1960, however, things were in full cry in terms of nationalization of foreign mining investments in the developing world. You mentioned Cuba. The principal operations taken over there were some iron ore properties--I think Bethlehem Steel had property there--and the nickel operations. There had been a copper mine in western Cuba owned by American Metal, but I believe it was already closed down at the time that Castro took over.

What had previously been called the Belgian Congo became an independent country named Zaire. Shortly after independence, the government took over the very extensive copper, cobalt, and zinc operations of Union Miniere.

In the neighboring country of Northern Rhodesia, when it gained independence its name was changed to Zambia. The Zambian government did not expropriate the copper properties completely, but they took a majority interest in those properties after lengthy negotiations with the Selection Trust and Anglo-American Companies, which were the previous British and South African operators of the mines. Because the Zambians recognized their lack of trained people, they continued to employ large numbers of what were called expatriates, mostly British and South African engineers. And the mines were reasonably well maintained.

In Indonesia, the former Netherlands East Indies, the tin operations had been taken over also by the government.

In Chile, there had been some developments toward government partnership with the American companies under the Frei administration, which was in office in the sixties, but when the leftist Allende government came to office in 1970, they expropriated the large American-owned copper properties outright. This included the Salvador and Chuquicamata mines of Anaconda, the El Teniente mine of Kennecott, and the newly opened Andina mine of Cerro de Pasco. Andina had just started up at the time that Allende took office. Allende refused to make any payment whatever for the Anaconda and Kennecott properties,[1] but he did

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[1]See Robert Haldeman, *Managing Copper Mines in Chile: Braden, CODELCO, Minerec, Pudahuel; Developing Controlled Bacterial Leaching of Copper from Sulphide Ores; 1941 to 1993*, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1995.

negotiate a modest payment to Cerro de Pasco for Andina, recognizing that they had not earned any profits from the mine.

In Peru, the military junta that came into power in 1968 started off by expropriating the oil properties of Exxon and other American companies in Peru. They nationalized the Marcona iron ore mine, which had been developed by Utah Mining [and Construction], and they also expropriated properties of W. R. Grace and Company. They permitted Cerro de Pasco to continue to operate for a while, but after a year or two, the conditions became so difficult for this extremely complex operation that Cerro de Pasco negotiated a transfer of the properties to the Peruvian government. The conditions were such that they were unable to earn a profit.

This left Southern Peru Copper as the only privately owned major foreign investment in the country. There may have been one or two relatively small mines. I think there was a Japanese copper-zinc operation that continued.

Asarco's Mexican Operations Are Squeezed; Industrial Minera Mexico Is Formed

Strauss: So this was really a trend of governments taking over mining operations in the developing world, and Mexico was not immune. The Mexican peso had gone through a series of devaluations. Each time the peso was devalued, it meant, of course, an immediate reduction in the operating costs of export industries such as the nonferrous mining activities, and the Mexican government regarded this as a form of windfall profits. To offset that, they had imposed export taxes. Asarco's operations in Mexico eventually found themselves paying a tax equivalent to about 24 percent of the gross value of the product--not the profit, but the gross value of the product--when they exported it. If they sold the product in Mexico, it was required that the product be sold to the Mexican consumer at the world price, usually the price on the London Metal Exchange, less this 24 percent. In other words, it was the equivalent of saying to us that our revenue was going to be 24 percent below the world price because our costs had dropped so sharply. Well, of course, the costs did not stay low. As a result of the devaluation of the peso, the unions would press for increased wages, all imported supplies cost much more in terms of Mexican pesos, and gradually our costs increased, with the result that the industry was being squeezed by the export tax.

The Mexican government in power in the late fifties and early sixties came upon an unusual strategy for accomplishing Mexicanization of the mining industry. They said that any Mexicanized company would not be subject to the export tax.

Swent: And what did this mean?

Strauss: A Mexicanized company would be a company in which at least 51 percent of the ownership was in the hands of genuine resident citizens of Mexico. One couldn't incorporate a dummy corporation in Mexico to hold 51 percent of the stock, because that would be obviously just a strategy for getting around this situation.

As a result, the foreign-owned mining companies in Mexico, Asarco included, were faced with the situation that they could make more money owning 49 percent of their companies than owning 100 percent. We all set about finding partners. Charles Barber and our then controller, whose name was Howard Goodenough, went to Mexico, spent a long period of time negotiating with Mexican capital to try to find someone who would pay us something for 51 percent ownership of these valuable assets, and they succeeded. A group of Mexican capitalists was found.

Swent: Were all of Asarco's Mexican holdings in one group, or did you have several corporations?

Strauss: We had a number of corporations, but they were basically all 100 percent owned by American Smelting and Refining. So a company was formed, the name of which changed at various times. It was first Asarco Mexicana, and then the Asarco connotation became a handicap, at least politically, so that name was changed. Eventually it was called Industrial Minera Mexico.

Swent: By then, Asarco was Asarco?

Strauss: No, it was still American Smelting and Refining Company.

Swent: Indústrial?

Strauss: Yes. But the Asarco acronym was being used too a great deal. Industrial Minera Mexico, IMM. There have been other corporate changes since then, but I won't go through them, because it's not really relevant.

The Mexican partners who had 51 percent insisted on taking over management, which was certainly appropriate, to accomplish the results the Mexican government wanted. For a time, as I think I said earlier, the market for Mexican mineral products outside of Mexico continued to be handled through the sales

office of Asarco in New York. We were paid a very modest commission by IMM to compensate us for the work we were doing for them, and to cover the cost of the commissions we in turn were paying our agents in overseas markets. But in the long run, eventually the Mexican management decided to take over direct sale, including sale of their lead and zinc in the United States. So we had a new competitor, which was our affiliate.

This was not unique to Asarco; the same thing happened with American Metal's operations in Mexico, which were taken over by the Peñoles organization. There were a lot of problems in educating our Mexican partners in the realities of the marketplace. We weren't always successful in making them understand the basic problems involved in dealing in metals, but of course, over the years they have gradually gotten to know what the problems are. One by one, the American engineers and financial and sales people who had been employed in Mexico were replaced by Mexicans, which I'm sure is appropriate. Many of these Mexicans were extremely able.

Eventually the chief of the Mexican organization became a gentleman named Jorge Larrea, who had been very successful as a contractor, particularly on government projects like road-building, dam-building, and construction, and so forth. A very skillful negotiator, a man with very good standing with some of the U.S. banks, particularly those on the Pacific Coast. So he was able to finance a lot of his undertakings quite successfully.

Eventually, he pulled off a ten strike in being able to get the Caridad copper deposit in Sonora for a joint venture with the government. It's gone through a lot of changes; most recently, the government has sold out its interest, but for a while it was a joint operation with partial government ownership. And that has been a very successful undertaking, and the financing was brilliant. My recollection is that the Caridad mine started up in 1979 or 1980.

On the whole, the properties which Asarco once had in Mexico are all still in operation. There have been some changes in the metallurgical plants, but the Mexicans have achieved their objective: they have obtained Mexican control of their mineral resources. However, it's interesting to note that within the last two or three years under President Salinas's administration, there's been a change of heart. Foreign capital is being invited back into Mexico. The limitations on Mexican ownership are no longer cited. The export taxes are long since forgotten.

So one doesn't know what the long-term future will be with Mexico, but for the time being, there is a good deal of foreign

capital going back into Mexico, and I assume that--although I don't know this--that Asarco is active there. The company I'm now associated with, Magma, has a man in Mexico looking around for possible projects that Magma might be involved in, and the climate for foreign mining investment in Mexico now is comparable with what it used to be in the early part of the century. So it's a curious turn of the wheel.

Swent: This may be a very stupid question, but when you're marketing copper, Asarco's copper and Kennecott's copper and Anaconda's copper are virtually the same?

Strauss: Correct.

Swent: So you're negotiating--

Strauss: The word that is used in the trade is "fungible." In other words, they're exchangeable one for the other.

Swent: Okay. So there's no question of the purity of one or the chemical content being any different?

Strauss: No. Right.

Swent: So you're negotiating simply on the basis of costs and profits and--?

Strauss: Well, and also on the basis of the record of service with a particular customer. Have you always met your commitments on time, and are your credit terms acceptable to him? Do you require advance payment, which sometimes happens. Those are the factors.

Swent: It's not a question of plugging a superior product.

Strauss: No. And at some point, we are going to have to have quite a discussion about the trade associations, because this is the thing that sets basic commodities apart from manufactured products. Mr. Ford can say that he has a better car than Mr. General Motors. There may be slight differences in the impurity content, but basically, copper is copper, and if it is produced in a refinery by experienced metallurgists, the wire mills that use that copper wouldn't know whether they're putting copper from Asarco or Phelps Dodge or Kennecott through the plant at any given time. It performs equally well. We cannot claim superior advantages for our metal over other people's metal. That is certainly true, and as I say--.

Swent: I think there have been great changes in the fabrication, however, haven't there?

Strauss: Well, in the fabricating processes. But here again, the product turned out by the wire mills or the brass mills are generally comparable. But this whole question of promotion and market share is a fascinating one that I do want to go into, but I'd rather now continue the chronology on the production side, if I may.

Swent: Yes. This tape is about to end, so this might be a good place to change the tape.

XI ASARCO'S MANAGEMENT STRUCTURE

Personnel Changes

Strauss: I think it's appropriate to talk a little bit about changes in the management of Asarco during this period that we've been talking about. Roger Straus had been chairman of the board in the early fifties, and the chief executive officer. He was a man who believed very strongly in the importance of having people retire, even though perhaps they might have all the mental capacity and physical figure to carry on with their office. But he saw that an organization might have difficulty in attracting younger people if they felt their way to advancement was blocked by older people. So promptly when he reached his sixty-fifth year, he retired as chairman, and was succeeded by Kenneth Brownell.

I'm sorry to say that Roger Straus lived only a year or two after his retirement. It was too bad.

Kenneth Brownell did not even live to his retirement. He developed high blood pressure, kidney problems, and he died prematurely in the summer of 1958. This was a great blow to the organization, because he had the confidence and cooperation of everyone in the organization.

The president when Kenneth died was the former general counsel of the company, R. Worth Vaughan, who was general counsel of the company. Worth was a brilliant negotiator and a fine lawyer, but he was not really an administrator and a group leader, and this was recognized by the directors.

John Mackenzie, Chairman and President

Strauss: So they looked around among the other senior executives and chose Mr. John Mackenzie to be chairman. Mr. Mackenzie had been the head of the smelting and refining department; he was vice president in charge of it. He was a member of the board of directors, was known to the directors, and they felt that he could be an effective leader of the company.

He decided that he wanted to be both chairman and president, and he changed Mr. Vaughan's title from president to vice chairman. Mr. Mackenzie's name indicates that he was Scots, and he had the traditional Scots sense of frugality and thrift. As a consequence, he was very careful about costs. As an example, in I think it was 1961 or '62, when the domestic market for metals was poor but the European market was fairly good, he told me that I could not make my annual trip to Europe because my job was to sell metals in the domestic market. It was true that we needed to push our sales in the U.S. where business was poor, but it was equally true that for a company in the international metals business, keeping in touch with what was going on in Europe by meeting people both among the producers and the consumers face to face was essential information.

But he did not place great strength on having information. He was more interested in productivity, tons per man-hour, and such issues. So of course, since he was my superior, I had to accede to his wishes, although I thought he was mistaken. I cite this as an instance that applied personally to me, but there were repeated examples of this throughout the organization.

Also, it was troubling, particularly to the people in the mining department, that Mr. Mackenzie chose as his two chief subordinates Bob Bradford, who had been a very able smelter operator, and Ed Tittmann, whose background also was in smelting and refining rather than in mining. So we had a somewhat lopsided organization while Mr. Mackenzie was in office. The financial, legal, sales organizations were considered merely service outfits. Their input into decision-making was not emphasized. There was some restlessness in the company as a result.

Opening the Mission Mine; Selling the Garfield Smelter

Strauss: One major achievement during the Mackenzie years was the opening of the Mission copper mine south of Tucson. The Silver Bell at that point was our only other domestic copper mine, and it was fairly small. Mission had a much greater potential. It was brought into production in 1960 or 1961 with an equipped capacity to produce about 45,000 tons of copper a year at a capital cost of about $40 million for the mine and the mill, which was really a splendid achievement, and reflects that Mr. Mackenzie's frugality in certain directions paid off.

The $40 million that was spent to bring the Mission project into operation curiously almost exactly matched the proceeds of the sale of the Garfield smelter in Utah to Kennecott. For many years, Asarco had done the smelting, Kennecott had done mining and milling, not just in Utah but also in New Mexico and in Arizona. Because of the large volume of production from Kennecott, it was treated on a toll basis, so the copper was returned to Kennecott and Kennecott sold it. The volume was so large that Kennecott, of course, was in a position to negotiate very tough terms. Hence Asarco's margins were not overly generous, and the profits from operating the smelters on Kennecott's behalf were not great.

However, the thing that made Charles Cox--who had become the head of Kennecott a few years earlier after a plane crash killed a number of Kennecott executives--the thing that caused Mr. Cox to insist that either he would buy the Garfield smelter or he would build his own, in which case Garfield would just be worth scrapping, was the fact that Mr. Cox thought Asarco was too tough in its labor negotiation. We had a number of strikes. If Asarco had a strike, Kennecott had no place to get its concentrate smelted. So he said he wanted to have his own smelter so he could control his production right through and decide what were the appropriate labor arrangements.

One can well understand his point of view, and since we weren't making too much money on smelting for Kennecott anyway, we negotiated the best deal we could. We actually received about $40 million for the Garfield smelter. Kennecott had a refinery that it had built at Salt Lake City which took some feed away from our East Coast copper refineries at Baltimore and Perth Amboy. So that was a real plus during the Mackenzie years. We had the Mission mine in place of the Garfield plant.

Also during that period, Lake Asbestos developed into a very profitable business, and there were a number of other irons in the fire.

Swent: You didn't sell the other smelters that were serving Kennecott?

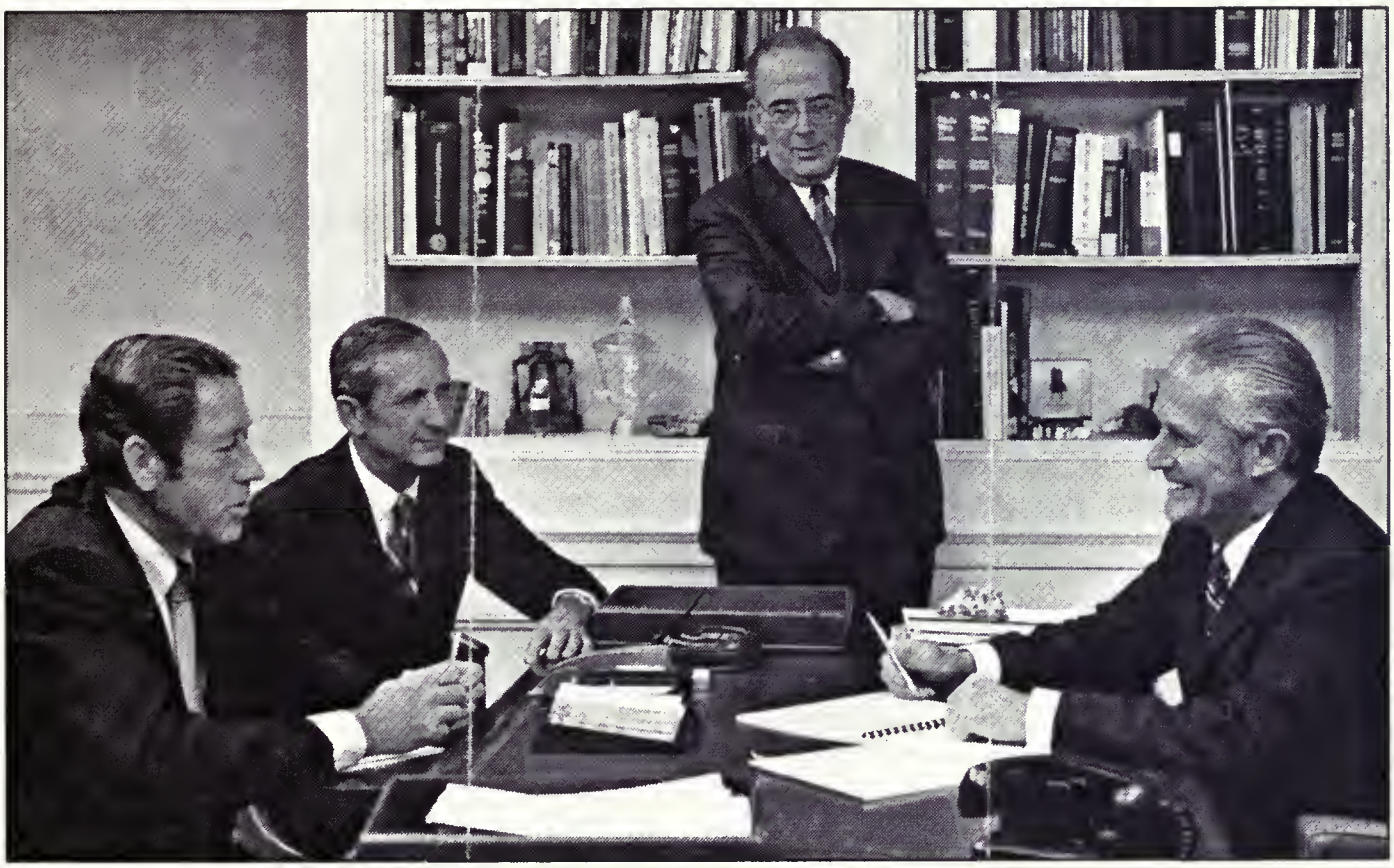
Strauss: No, but Kennecott built its own smelter in Arizona across the river from the Hayden Smelter. But we had developed the Mission mine, so the Mission supplied Hayden, and Ray had its own independent smelter. In New Mexico, Chino, which had previously shipped concentrates to Asarco's El Paso smelter, Chino had built a smelter some years before.

So by the time the Garfield plant was sold and the new plant of Kennecott's at Hayden was built, in effect Asarco was no longer treating any material for Kennecott.

Swent: So it didn't bother you greatly.

Strauss: No, because we had other sources of feed, including--and this will come into play a little later--the fact that the Duval Mining Company, a subsidiary of Pennzoil, was developing a number of mining properties in Arizona, and they shipped their concentrates either to Hayden or to El Paso. So the flow of feed was adequate. The copper business was expanding in the United States in spite of the Paley forecast, and our smelting capacity was needed.

So that pretty much tells the story about the management changes that occurred at that time. Eventually, Mr. Mackenzie retired--I think it was in 1963 or '64--and he was succeeded by Mr. Tittmann. Although a smelting man, Mr. Tittmann had a great interest in mining properties, and as a result, the feeling of many of the people in the mining department that mining was being sort of downplayed in the organization, didn't have a proper voice, was overcome.



From ASARCO report, February 26, 1974. Ralph L. Hennebach, President; Forrest G. Hamrick, Executive Vice President; Simon D. Strauss, Executive Vice President; Charles F. Barber, Chairman of the Board and Chief Executive Officer.

XII SILVER

Increase in Industrial Consumption in the 1950s

Strauss: I'd like now to speak about one other factor as the fifties ended and the sixties began, on which I spent a lot of time, and that was the question of silver.[1] I've mentioned earlier that the United States government had in effect a law which provided for the purchase of domestically mined silver at a fixed price at sixty-four cents an ounce. This was frowned on by the financial communities; they thought it was an unnecessary subsidy. The world market prices had been for years in the neighborhood of forty-five, fifty cents an ounce.

But as the fifties developed, there was a steady increase in the consumption of silver for industrial purposes, having nothing to do with jewelry or silverware--that consumption was maintained, but it wasn't particularly growing. The big growth was in the photographic industry and in the electrical and electronic applications of silver. And as a consequence, the world price began to edge up toward the domestic price of sixty-four cents.

A 1959 Address to the MMSA Predicting Rise in Silver Price

Strauss: In late 1959, at the request of the Mining and Metallurgical Society of America, I gave a talk in New York dealing with this issue, and predicting something which most people thought I was fantasizing. This was that the price of silver inevitably had to increase, and that the Treasury was making a mistake, because in addition to buying from the domestic producers at sixty-four cents, it would sell to any consumer without limit at roughly the same price. Now, this was silver that had been accumulated as a

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[1]See Appenidx D.

result of purchases under the legislation during the Roosevelt era, and also as a result of the return to the Treasury of some of the lend-lease silver that we spoke about earlier that had been used for coinage in India and for other purposes during the war. That silver was being returned to the Treasury.

But in spite of that, I perceived a steady erosion in the Treasury holdings of silver, and there would be a day when Treasury would not have any more silver available for sale under the terms of the legislation. And I thought it was a great mistake that Treasury did not gradually take steps to accustom the consuming trade to the fact that the price inevitably would have to rise.

As a consequence of my strong belief that the price of silver would rise, on a personal basis I began to accumulate silver coinage, believing that at some future date, the price of silver would be above the statutory value of silver. The statutory value was $1.29 an ounce.

Swent: And this had been set in 17--

Strauss: In 1792 by Alexander Hamilton; never changed. I say it's the statutory value: it's the result of requiring that a silver dollar contain 0.77 ounces of silver. So I began to accumulate silver coinage. Some other people who shared my view, and at that time there were relatively few, began to accumulate one-dollar bills that were redeemable in silver. In the early sixties, this accumulation began to mount. The silver dealers in London were very well aware of the situation. They began to accumulate silver dollars. The price of silver rose, I think it was to ninety or ninety-one cents an ounce. The domestic miners were paid the higher price, but the consumers were allowed to buy their silver at this price also.

Change in Silver Coins

Strauss: Finally, in 1962 or 1963, a real run began on the Treasury holdings of silver, and it was clear that they were going to be out of silver. At that point, the Treasury recognized that it might have to change the coinage, that it could not continue coinage--not the silver dollars, because they weren't coining silver dollars any more--but the dimes, quarters, and half-dollars containing silver would be worth more as silver than the face value on them. They couldn't risk a situation developing

where there would not be enough coins in circulation for retail merchants to continue their trade.

So during the early sixties, there were hearings held in the Congress as to what the new coinage should be. The Treasury made various changes and suggestions. I think it was 1963 or '64, the final decision was to go to the present basis of coinage, which is the subsidiary coinage--the dime, the quarter, and the half-dollar--should be made of a nickel-copper alloy. Instead of having a pure alloy content, the so-called sandwich coin was developed by the Olin Company, one of the leading metal fabricators, under which an underlying core of copper was coated with a nickel-copper alloy which somewhat resembled silver in appearance.

One of the big problems in all this was the position of the vending machines.

Swent: The telephones--

Strauss: And the telephones. They had to be able to operate with something that would have properties similar to silver, and that's why Olin did this work and developed this alloy which in fact was compatible with the vending machines and with the telephones.

The American Mining Congress Silver Committee

Strauss: This problem occupied a great deal of my time. I was active with a group of silver producers, and eventually a silver committee was formed by the American Mining Congress. I was the spokesman for the industry in hearings before the various congressional committees. I got to know the silver consumers who were on the opposite side of the fence. They did not at all accept the idea that silver has any intrinsic value or that it was at all appropriate--they were very pleased that the Treasury was going to stop the use of silver, because that meant the Treasury wasn't a competitor of theirs for available supplies. They were very pleased about that, but they didn't buy the idea that silver had any special value.

But although on opposite sides of the fence, we were really quite good friends. I organized a trip for silver consumers out to Idaho to go underground at the Coeur d'Alene operations of Asarco so that some of these silver manufacturers who had used millions of ounces of silver making teaspoons and forks and

knives could see how difficult and how involved the production of silver was, what substantial capital investments were necessary to get their raw materials for them.

And of course, the eventual change came about in an orderly fashion. The price of silver was held down by the Treasury; it continued to sell from its stocks for a while, until they had minted enough coins of the base-metal sandwich. Because if they had stopped selling silver, its price might have risen so sharply that the coins would have disappeared from circulation.

Swent: Was that Hunt episode at the same time?

Strauss: No, that was several years later, and we will talk about that. That was in 1979-1980.

The half-dollar, incidentally, originally when they decided on a tribute to the recently slain President Kennedy, to make the fifty-cent coin with his profile on it, for a while that was minted with some silver in the coating. The core was still copper, but there was I think 40 percent silver content. But they had to stop that eventually when the price of silver rose sharply.

Swent: When did they call in the silver certificates?

Strauss: Those were called in--

Swent: That was all part of this same--?

Strauss: That's right. The silver certificates were called in about 1975 or 1976. And what was interesting about that was that you could take just a few dollars, and you would get not a silver bar, because you had to have at least $1,300 for a silver bar, you got silver crystals in a little plastic bag. Mr. Tittmann, who by then was the head of the company, used to get a great kick out of going and exchanging his silver certificates for these glassine envelopes.

So that occupied a great deal of time. As a consequence of the loss of this major market for silver, namely coinage, we decided to form an organization called the Silver Institute to promote the uses of silver, and I'll discuss that later when I go into the whole field of the trade associations.

XIII THE GOVERNMENT STOCKPILE PROGRAM IN THE 1950S AND 1960S

Acceleration of Base Metal Acquisitions

Strauss: One other Washington-related activity that's worth mentioning: the stockpile, and some of the incidental consequences of stockpiling.

Swent: Yes, I wanted to ask about that.

Strauss: During the Korean War, the stockpiles were held more or less inviolate, although I mentioned that Mr. Atlee wanted to get some zinc out of the stockpile. As a result of the Korean experience, the Eisenhower administration, which was in office in the mid-fifties, decided to accelerate the accumulation of the stockpiles, particularly for lead and zinc, which was sort of curious, because one doesn't think of those as being too strategic and critical.[1] A program was inaugurated in '52 or '53 --'53, I think it was--under which there was a monthly purchase of domestic lead and zinc for the stockpile. Quotas were assigned to the smelters and refineries that sold the product, and this tended to keep the price of lead and zinc to the levels at which they had risen when the Korean war broke out.

About 1955, however, they had accumulated so much lead and zinc under the purchase program, in addition to what they had purchased directly from foreign producers, that the program was called to a halt. The prices of lead and zinc promptly fell very sharply. This caused a lot of distress to the domestic industry, and there was agitation for some form of relief, because Australia, Canada, Mexico, and Peru, the principal foreign producers of lead and zinc, were expanding their production rapidly and shipping large quantities of lead and zinc into the U.S. market.

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[1]See Appendix C.

The Quota Import Plan in Response to a Glut

Strauss: So something called the quota import plan was put into effect by the Eisenhower administration in I think either '58 or '59. Quotas were assigned to each of these four major import sources, and then there was also a quota for miscellaneous countries under the heading of "other countries."

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Strauss: The quantities specified were quarterly imports. The result was something like the land rush when Oklahoma was opened to the settlers. At the beginning of every quarter, importers rushed to bring in as much material as possible, and the quotas were filled well before the month was up. It must have been a terrible headache for the Customs Department to administer this.

For instance, the Mexican quota. There were two importers from Mexico. One was American Metal representing Peñoles; the other was Asarco. This was before Mexicanization had really taken hold. And it was really a shambles, but it took a lot of time, once again, to try to get the maximum quota we could at the expense of our competitor, Amax.

Swent: Who were you dealing with? Which agency of the government actually bought these?

Strauss: No, the imports were not bought by the government. These were imports for sale to consumers.

Swent: I see, but you had to get your quota from the government?

Strauss: I think I've confused you between two quotas.

Swent: I want to be sure I'm right about this.

Strauss: Yes. Earlier, I was talking about the stockpile. That was sales to the government. There were quotas for that. The stockpile program ended. The markets dropped. Then this import regulation set in, and there were quotas for that. Those are entirely different from the quotas assigned to us as producers for sale to the stockpile. I'm now talking about quotas for the right to import metal into the United States. We had to bring in materials as quickly as we could.

Mexican Fabrication of Lead to Evade the Quotas

Strauss: Now, the quotas only applied to refined metal or to ores from concentrates. They did not apply to fabricated articles made of lead and zinc. Well, there are very few fabricated articles that are pure lead or pure zinc. However, a group of ingenious Mexican fabricators suddenly decided to go into the business of manufacturing what they called agricultural grinding wheels. They cast large, round cakes of lead which they said could be used for grinding wheat. You can imagine what the environmentalists would think about that today, to use lead, a toxic element, for the purpose of grinding food.

However, it was all a sham. As Mexican fabricators, they had the privilege of buying lead in Mexico from the producers, either American Metal or Asarco, at the world price less the export taxes. So they got their lead very cheap. They exported it and told the Mexican government that it was a fabricated product. They told the U.S. Customs official that this was scrap, which also was not subject to the import quotas. So they paid the lower import tax that applied to scrap, and they shipped the material into the United States. It was promptly melted down and sold in competition with our refined lead. It was just pure lead cast in these round wheels.

I cite this because it shows how ingenious people are in dealing with government regulation, and why in trying to control things, the government will often create the opportunities for people not exactly to black market, but to take advantage. As producers of lead from Mexico, obviously Asarco was compelled to sell to the Mexican fabricator. The Mexican government wouldn't hear of us turning down any fabricator who wanted to buy lead from us. We were compelled to sell to him. He turns around, takes advantage of these government regulations not to pay export tax in Mexico, to pay a lower customs import duty in the United States, and to compete with us with the final product when it's melted down.

That only was possible as long as these import quotas were in effect. It soon disappeared.

Swent: You didn't corner the agricultural grinding wheel business yourself?

Strauss: No, we wouldn't have been allowed to by the Mexican government. [laughter] It would have been prohibited for us to do that, because we would be competing with Mexican--.

Swent: So. [laughter]

Strauss: These issues were debated in meetings of the American Mining Congress, and we--

Swent: It's a joke now, but it was very serious then.

Strauss: Yes, that's right. We spent a lot of time dealing with this problem.

Swent: So the import quotas were finally taken off?

Strauss: Yes. I think they were put in for a four-year period or something like that, but then they were forgotten. It was a completely artificial, mistaken way of helping the domestic producers. It didn't really help them; it annoyed all the foreign governments, and they argued about whether the quota was large enough, it wasn't justified. It was a great headache while it was in existence.

Swent: Yes, I'm sure.

XIV THE COPPER MARKET IN THE EARLY 1960S

An African Attempt to Stabilize Prices, 1961-1964

Strauss: Now, speaking of the early sixties, I think it's appropriate then to talk about the copper market and what happened between 1961 and 1964. The major African producers of copper--this was prior to the nationalizations--had been Union Miniere in Zaire, Belgian Congo, and Selection Trust and Anglo-American in Northern Rhodesia, now Zambia. The three companies were very concerned about the sharp fluctuations in price on the London Metal Exchange. There had been a severe run-up in the mid-fifties at the time the U.S. government was stockpiling. Prices had risen from the twenty-four- to thirty-cent range in the early part of the Korean War in '55. I think the LME [London Metal Exchange] price got well above fifty cents a pound.

This was at a time when the aluminum industry was expanding rapidly. It was challenging copper in a lot of different market applications, and these three companies, led by Ronald Prain, whom I've mentioned previously, concluded that the instability in price was going to cause further loss of copper markets to aluminum. So they thought something ought to be done to stabilize the price.

What they hit upon was a scheme of actually intervening in the trading of the London Metal Exchange. They chose a price of thirty-one cents a pound, the equivalent in pounds sterling. When the price seemed to soften, because supplies were being offered freely, they bought. They, as producers, bought copper on the London Metal Exchange and held it off the market. When the price went above thirty-one cents a pound, they sold. This was a price stabilization scheme operated not by governments but by three private producers.

Swent: That wouldn't be allowed here, would it?

Strauss: No, it would be strictly illegal. The American companies operating in Chile and Peru were not a party to this scheme. But they were sympathetic to it, in the sense that they liked the idea of a stabilized price.

It worked for three years, from early 1961 until early 1964.

Swent: How did you become aware of this? Just when it started happening?

Strauss: Well, you could see the price didn't change. You made inquiries, why isn't it changing? Well, it was common knowledge on the floor of the London Metal Exchange. It was one of the things that I learned when I went over to London, but--

Swent: You were in touch with people from all of these--

Strauss: Yes, and if they came to New York, they would come call me. We were well aware of what they were doing. We didn't participate.

Swent: Were you aware of it before they did it, that they were planning it?

Strauss: No, only after they had started the operation.

A Prescient Man-of-the-Year Speech to the Copper Club

Strauss: In 1963, the Copper Club did me the honor of designating me as the copper man of the year. They had only started this the previous year, when they had picked Mr. Clyde Weed of Anaconda to be the first copper man of the year. The theory was that the person selected was doing something on behalf of the copper industry as a whole, not just for his company, and since I had been the spokesman for the industry on stockpile issues and other matters, they chose me. And they expected me to make a few remarks.

I discussed this scheme, this rigidity of price. I said, "Certainly, consumers and producers both find extreme fluctuations in price very difficult, because it's hard to plan when the price is changing sharply from day to day. On the other hand, to try to fix the price at any one level for any length of time is dangerous, because how do you fix the exact right price? And does it overstimulate supply, or does it overstimulate demand, or does it discourage demand? And I would think that the people that are running this would do well to try a little more

flexible approach instead of being so rigid." That was all that I said at that time. That was February of '63.

In February of '64, the demand for copper became so insistent that the African producers sold out. They had no inventory of copper left to meet the demand. What was happening was we were beginning to get involved in Vietnam. Japan's reconstruction was going along. Business in Europe was very good. Everybody was buying automobiles. And the demand was beginning to outrun the supply.

Demand Outruns Supply; Stabilization Efforts Fail

Strauss: Within months, the price went through the roof. It got from thirty-one cents, it climbed above forty, and then it climbed above fifty, and it climbed above sixty cents a pound, within a matter of a few months. The Chileans had been selling at a producer price, which was the thirty-one-cent price. Even though they weren't part of the schemes, they had been selling at that price because that was the price on the London exchange.

I think Anaconda and Kennecott were probably prepared to continue to exercise some restraint, but by May or June of that year, the Chilean government decided that it could not ignore the London Metal Exchange any more, and they instructed Anaconda and Kennecott that they were not to sell at a producer price, they were to sell at the equivalent of the London Metal Exchange price, and that broke down the scheme. That was the end of the African effort to stabilize the copper price.

Now, the domestic producers, and I mentioned this earlier, also were concerned about volatile prices. During that sharp run up that I mentioned earlier in the fifties, the domestic price had not risen to nearly the same extent. The custom smelters, Asarco and American Metal, had to increase our price because we were paying more for scrap and also because the small mines that shipped to us wanted the better price. But the large producers--Phelps Dodge, Anaconda, and Kennecott--had pretty much stuck to the price. I forget now what the prices were; I could look it up sometime. But they had had a price well below the London Metal Exchange equivalent.

This time in 1964, our price had been thirty-four cents a pound when the London price was thirty-one because of the import duty and the cost of transport. We did make an increase in the spring of 1964 to thirty-six cents a pound. A couple of months

later, with the London price in the high forties or low fifties, one producer, and I think it was Jim Boyd at Copper Range, decided to move the price from thirty-six to thirty-eight cents. At that point, Lyndon Johnson balked. He issued a tirade; this was taking advantage--because he was concerned about the Vietnam War and the costs of munitions and everything. So the domestic producers did not raise their prices beyond thirty-eight cents. We had this enormous spread between London and New York, huge.

The Strike of 1967-68

Strauss: This was the foundation of the industry-wide copper strike that you asked me about in '67 and '68. The contracts had been renewed in '64; I think there had been just a minor shutdown for a few days. But as the time went on, and the foreign price was at this enormous premium over the U.S. price, the market became extremely difficult. Mr. Johnson insisted that we had to sell at thirty-eight cents. It was a form of verbal price control, in effect. We did sell our domestic copper at that price, rather than get in trouble with the government.

Swent: Well, buyers would be only too happy, wouldn't they?

Strauss: Oh, of course. They were happy. But they began to complain because they weren't getting enough of the low price and they were having to buy additional imported copper at the much higher price. Any copper of foreign origin, and we always made the distinction in keeping our books, because copper of foreign origin that we smelted and refined in this country was usually priced on the basis of the London Metal Exchange quotations. So we ran two accounts in copper, one of domestic origin, one of foreign origin. The foreign origin copper, we told the government, "If you don't want us to sell it at the world price in the United States, we'll just have to export it." And of course, that began to create pressures on the domestic consumer.

You can imagine that an independent fabricator was very concerned that he was having to pay the world price for an increasing share of his supply. It's natural that this engendered the suspicion that the companies with their integrated fabricating operation were feeding all of their domestic low-price copper to their own fabricators, and not selling a fair amount to others. So they went to the Justice Department, and that was the beginning of an investigation of the whole pricing system by the Justice Department.

So you had an anomalous situation. One part of the government was saying we were discriminating against our customers by not giving them their fair share of the low-priced copper, and forcing them to buy high-priced copper, and another part of the United States government was saying, "Keep the price of copper down, we've got a war on." It was a very, very difficult position.

Swent: And what was the issue that led to the strike, then? On what basis did they--

Strauss: Well, the workers were aware of the world price, and they decided they wanted a big increase in wages, and we said, "Mr. Johnson won't let us pay more, and so we've got to--we can't afford to pay more."

Swent: Charge more.

Strauss: Well, we can't afford to pay the workers more. We can't afford to increase salaries.

Swent: Because your selling price was kept low.

Strauss: That's right. So the strike started in July of 1967, and lasted until March of '68. Actually, I'm abbreviating a lot here. You have to almost follow this thing on a month-to-month basis. By '66, the London price had started to come down a bit, but the minute the strike developed, of course, it shot back up again. And in fact, the differentials became even greater. There was a little domestic production that continued, but most of the U.S. production was shut down for nine months, the longest strike ever in the history of the country.

Swent: There was another big strike, though, of yours in the late fifties, early sixties, wasn't there?

Strauss: Nothing of the same dimensions.

Swent: San Manuel had a big--

Strauss: Yes. But it might have been three months, but it wasn't seven.

Swent: No, it was '67-'68 that was the big strike.

Strauss: Was the major strike.

Swent: And that was the one that Phelps Dodge--was that the one that crippled Phelps Dodge?

Strauss: No. That strike was later on. That was the one that Mr. Moolick was involved in when he was president. That was in the early eighties.

Swent: But this one, you were personally involved.

Strauss: Oh, very much, and dealing with the customers was so difficult. Of course, Southern Peru did very well in the '64 to '68 period, and that was--

Swent: They were using the LME price.

Strauss: Yes. And that was when we decided to go ahead with Cuajone, and then we had the revolutionary situation that we discussed earlier in Peru, and the threat of government takeover. But up until that junta takeover, there had been no threat to our operation, other than that the union officials would put out propaganda about the foreigners making excessive profits and taking Peru's patrimony. That's the great phrase they like to use in Latin America, for the benefit of foreigners.

Throughout, you see this tendency of politicians always to work on people's xenophobic, I think is the word, feeling. In fact, my earlier discussion about the trends in Latin America, this spread to Australia and Canada as well. There were restrictions on foreign investment in mining in those countries. Asarco sold part of its Mount Isa holdings to get below 50 percent, and then gradually over the years it's been reduced further to placate the Labor government, the Whitlam government. Australia was very anti-foreign investors for a while.

So the sixties was a very turbulent period, not just on the college campuses. It was a very turbulent period in the metal markets. There were these great changes going on, and strains on the economy. But at Asarco, Mr. Tittmann provided very good leadership. Mr. Barber was president while Mr. Tittmann was chairman, and Ralph Hennebach was brought along in senior management. We had an era of considerable growth and expansion.

A Look and a Pull-out at Sar Cheshmeh in Iran

Strauss: In addition to the Cuajone project, which was a major one, we were actually approached by Ex-Im Bank about the Sar Cheshmeh property in Iran, and Tittmann made a trip over there with our chief financial officer, Forrest Hamrick, and was convinced that it was a major property. But when discussing it with Shah's

minister of mines--because the Shah was still in power in Iran at the time--there were indications that it would be advantageous to us if we were serious about investing, about making an under-the-table payment of $3 million. That ended our interest in Iran. We didn't want to go into a country where public officials blatantly asked for bribes, so we pulled out.

Later Anaconda came in, but not as an investor, but only to provide management for the construction of that project, which has never really fulfilled expectations. It was the same size as Cuajone. The investment was twice what the Cuajone investment was. Construction was started at the same time. Cuajone started up on schedule in 1976. I think Sar Cheshmeh got going about 1980. Part of it was the political turbulence in the country, but in addition to that, there was, I think, a great deal of corruption throughout in the construction, purchasing of the equipment, every aspect.

So toward the end of the decade of the sixties, Newmont approached us whether we would be interested in a development of the Granduc deposit in British Columbia. I don't know how familiar you are with that.

Granduc in British Columbia[1]

Swent: Well, a little bit.

Strauss: It's in the snowbelt of northwestern British Columbia. The snowfall is something like 600 inches a year. It was necessary to drive a tunnel from the west side under the mountain range to hit the deposit. There was talk even of putting the mill underground. Eventually, it was built on the surface, but we knew that we had to sweep the snow off the roof regularly, or we would be in trouble. [laughs]

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[1]For more about Granduc, see Frank Woods McQuiston, Jr., *Metallurgist for Newmont Mining Corporation and U.S. Atomic Energy Commission, 1934-1982*, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1989; Plato Malozemoff, *A Life in Mining: Siberia to Chairman of Newmont Mining Corporation, 1909-1985*, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1990; John Livermore, interview in process, 1995.

Although the property would ship out of a port, I think actually in Alaska, there would be convenient access to the Tacoma smelter. In fact, from the start, it was recognized that the Japanese were offering such low treatment charges that shipment would be to Japan. We were 50-50 partners with Newmont. The arrangement was that each of the partners would handle the sale of its own 50 percent share of the production.

The costs were in excess of what had been expected. In driving the tunnel, they ran into some very bad ground.

Swent: And wasn't there a disastrous avalanche, too?

Strauss: That happened after Asarco and Newmont shut the project down. Exxon took it over, and they forgot to take the snow off the roof.

Other Ventures: Black Cloud, Coeur, Mission, Pima Mines

Strauss: We were talking about the Granduc project. So it represented a considerable loss to both companies. Newmont and Asarco have been collaborators in other ventures, Southern Peru of course, but also the so-called Black Cloud mine of Resurrection Mining in Colorado, in Leadville, is jointly owned by the two companies. It's actually operated by Asarco, but Newmont is kept fully abreast of everything that goes on. It's been operated continuously for some thirty years--and it's still running. It's the only lead-zinc mine running in Colorado, that I know of, of any consequence. Has rather good silver and gold contents.

Another new undertaking during this period in the sixties was the development of the Coeur mine in Idaho. Asarco had previously developed the Galena mine, owned by Callahan, which is primarily a silver producer with some byproduct copper and some potential for byproduct lead, since the early 1950s. The Coeur property immediately adjoined Callahan's property, and it seemed that the ore bodies might well extend into Coeur ground. The exploration had to be done from a shaft, because the ore bodies are narrow, and you can do all the drilling you want from the surface, but you may miss the ore bodies. A shaft was sunk, and some of the workings from the Callahan operation were extended. In fact, we did find substantial deposits of highgrade silver ore. That was brought into production. Our confidence with regard to the outlook for silver prices during the period when the government had been sitting on the market contributed to the decision to go ahead with the Coeur mine.

Incidentally, I have been talking about Callahan. The actual name of the mine is the Galena mine, but it belonged to Callahan, which is now part of--is it Hecla? No, Coeur d'Alene Mines, I think.

So the Coeur mine was owned by Coeur d'Alene Mines, but Asarco put up the capital, and under the arrangement, the capital was returned first, and after return, the profits were shared with Coeur. This has been a profitable mine for most of its existence, although I believe it's currently closed down due to the temporary weakness in the silver market.

The Mission mine was expanded toward the end of the period. Subsequently, the adjoining Pima mine, which Cyprus Mines had opened, has been acquired, and also some of the ground owned by Duval Sulphur or Duval Mining and Anaconda in the joint project they had. So Mission has steadily grown in size. It's now one of the major mines in the country.

XV RESISTING ATTEMPTED TAKEOVERS

Pennzoil Fails in an Attempt to Acquire Asarco, 1969

Strauss: One of the major developments, I think it was 1969--might have been 1970--was the fact that Asarco's attractive holdings on a worldwide basis in mineral resources caught the attention of people who were interested in making acquisitions. An early approach had been made to Asarco by the old Studebaker company. Do you remember the automobile?

Swent: Sure.

Strauss: Nothing came of that. Then the Worthington Pump people had some discussions, but they were discouraged.

However, a very serious attempt was made by one of the oil companies, Pennzoil. The head of Pennzoil, Hugh Liedtke, came to see Mr. Tittmann and told him that Pennzoil was prepared to buy Asarco shares at ninety-five dollars a share. This was a quite high price, and Mr. Liedtke was quite confident that Asarco would be tempted.

Mr. Tittmann told him he was not interested. There was evidence that Pennzoil nevertheless would persist, and in fact, I think it was at Christmas of 1969, maybe two or three days before the holiday, that they published in the papers--*Wall Street Journal, New York Times*--an advertisement offering to buy Asarco shares at that price.

We had to devise a strategy to combat this offer. Pennzoil had a subsidiary named Duval, which was in the copper mining business. Although in the past, Asarco had denied being involved in antitrust activities, it seemed reasonable now to raise the issue of whether a combination of Asarco with Duval, Pennzoil's

subsidiary, would create an antitrust problem in copper mining. Therefore--

Swent: Were you a director at this time?

Strauss: Yes.

Swent: You had become a director.

Strauss: I had become a director in '53, so I was a director quite a few years. Therefore, application was made to the federal district court in Wilmington, Delaware, for an injunction against the Pennzoil offer on the grounds that there might be an antitrust problem.

Swent: You--Asarco brought this?

Strauss: Asarco brought that action in the courts. The judge to whom--

Swent: Why Delaware?

Strauss: Because Asarco is incorporated in Delaware. Therefore, as a Delaware corporation, we were operating under Delaware law. But this was federal district court, because antitrust is a federal matter.

The judge to whom the matter was referred promptly asked both Asarco and Pennzoil for their comments, indicating why there was or was not an antitrust problem. Asarco's counsel's office asked me to prepare an analysis of the copper market indicating the shares that Pennzoil, as a miner of copper, and Asarco, as a miner of copper, had in the copper market, the domestic copper market. I prepared such an analysis covering a period of years showing growing production on the part of both companies. If this had been 1950, there would have been no case, but by 1969-1970, both companies were significant domestic miners of copper, and I said so, and I gave the percents.

Defining New Scrap, with Help from Mayflower Donuts

Strauss: Pennzoil had a statement prepared by Evan Just of Stanford, and it showed what their interpretation was as to the shares of the market. Naturally, we were furnished with a copy of this statement, and I immediately noticed that in defining the market, they had included everything except the kitchen stove, to make the market as large as possible and our shares as small as possible. It was the normal reaction, obviously, that they would have done this. Included in the market, as Just defined it, was not only all of the domestic scrap supply, in addition to the mine supply, but scrap supply included what is called new scrap. New scrap represents the clippings and other scrap engendered in fabricating of copper products. New scrap has therefore never been consumed, and in my view, should not be included in any definition of a market.

The judge read these two statements, noted the differences, and decided he had to have a hearing. The hearing was held in Wilmington, as I remember it, in early February. I was Asarco's witness. Pennzoil did not choose to have a witness; they rested on Mr. Just's analysis.

When I took the stand, I immediately made the point that the Pennzoil analysis was deficient because it included new scrap, and that new scrap was copper that had never been consumed and therefore was not part of the market. The judge indicated that he understood what I was saying. The attorney for Pennzoil was a very distinguished lawyer, Whitney North Seymour, who had been president of the American Bar Association the year before. Mr. Seymour said, "I don't really see what you're talking about, Mr. Strauss. New scrap is usable, isn't it?"

I said, "It is usable. But you have forgotten the slogan of the Mayflower Donut Shops."

He said, "What are you talking about? What possible relevance does that have to these proceedings?"

I said, "Mr. Seymour, as you perhaps know, the slogan of the Mayflower Donut Shops is, `As you ramble on through life, Brother, whatever be your goal, keep your eye upon the donut, and not upon the hole.'"

He said, "How does that apply in this case?"

I said, "Mr. Seymour, if Mrs. Seymour goes to the corner grocery shop intending to make donuts and buys a five-pound bag of Pillsbury flour and brings it home, adds the other ingredients, rolls out the dough, takes her little cookie cutter and stamps out the donuts, there's stuff in the middle and stuff around the edges. I'm sure she's a thrifty housewife. Therefore, she takes that dough that she has extracted and rolls that out, and stamps that, and continues doing that until she has used all of the dough. Has she used five pounds of flour or five pounds plus the weight of the stuff in the middle and the stuff around the edges? Because if you're including new scrap, that's what it is. It's the stuff in the middle and the stuff around the edges."

His next question was about molybdenum.

The judge came out with his statement later, and said that whether or not there is an antitrust problem would require investigation, and "until this has been investigated, I am granting the request of Asarco for an injunction."

So the case was decided. Pennzoil couldn't stand there offering ninety-five dollars a share for Asarco stock until an antitrust investigation was completed. That might be five years down the road. So they withdrew their offer, and the merger never went through. That was one of the most amusing episodes I've ever been connected with in my career, and I'll always be grateful to the Mayflower Donut Shop. It suddenly struck me, how can I make this clear to this lawyer, what new scrap really is? You can't add it. Sure, it is eventually consumed, but when it is in scrap form it has never reached the ultimate user and is not part of the market. So we won the case, and I think this is a good time to stop.

Swent: Had you and Evan Just worked together at E&MJ at all?

Strauss: No, he came to E&MJ long after I was there. He was postwar at E&MJ. He had previously been the secretary of, I think, the Lead-Zinc Producers Association in the Tri-State district. We were very good friends, and still are. When I sent him a copy of my book, he wrote me a very nice letter.

Swent: Your book, *Trouble in the Third Kingdom* [Mining Journal Books Ltd., London, 1986]?

Strauss: Yes. So we are good friends. And I know that he--[laughs] for that matter, George Atwood--I don't know whether you're planning

ever to do an oral history of him--he'd be a good one. He was the head of Duval. He was present during the hearing. He grins every time I see him, and we talk about donuts. [laughing] He knew perfectly well that the facts supported the Asarco position rather than the Pennzoil position.

Swent: Your position was that it would have been a violation of antitrust?

Strauss: Well, it might have been. We didn't say it was. We just said that there was a question here, the merger should not be allowed to proceed until the question had been resolved. Just like on this recent Amax merger with Cyprus, you know the molybdenum problem raised its head, and Cyprus was required to dispose of their Thompson Creek mine up in Idaho, which they sold to a former employee, and I don't know whether there aren't some strings behind the scene, but apparently, it's been approved by the Justice Department.

Swent: You have to be careful.

Strauss: Yes.

Mr. Holmes a'Court Attempts a Takeover

Swent: We're continuing now after the lunch break.

Strauss: There have been other attempts to take over Asarco. One in fact occurred after I retired when an Australian financier whose name was Holmes a'Court made the effort. We don't believe his objective was really so much to acquire Asarco. He was probably interested in Mount Isa, and our guess is that if he had been successful, after acquiring Asarco, he would have transferred Mount Isa's shares to one of his other companies and then spun off the remainder of Asarco. That's just a theory; nobody really knows what was in his mind. But his effort was stopped, and in fact, to make sure it would be stopped, Mount Isa took on a substantial quantity of Asarco shares, about 25 percent of Asarco's capitalization.

So Asarco is one of the few companies that survived the takeover of the copper industry, which curiously enough was largely on the part of the oil industry. The first transaction was when, sometime in the fifties, the Cities Service Company bought the Miami Copper Company and its affiliate, Tennessee Copper Corporation. Subsequently, Pennzoil, through Duval,

entered copper mining. Later on, Louisiana Land and Exploration acquired Copper Range and the White Pine mine. Then there was the celebrated takeover of Anaconda by Atlantic Richfield, and Kennecott was taken over by Standard of Ohio, which later was absorbed by its parent, British Petroleum.

The only company that really tried to get in the copper business by going directly into copper exploration and production was Exxon. I mentioned the Granduc mine. They also acquired a property in Chile, the Disputada, and they made efforts to find copper and zinc deposits in Wisconsin and elsewhere.

Comparing the Copper and Oil Industries

Strauss: It is interesting that in the final analysis, oil and copper didn't mix just like oil and water don't mix. The industries are very dissimilar, even though they both are based on mineral resources. The exploration tool for an oil company is the drill hole which it puts down in the hope of finding oil. If oil is discovered, that drill hole becomes actually the vehicle for the production of oil. But when a copper company puts down a drill hole, if it hits a copper ore body, it will take, as I said earlier, five, ten, or fifteen years before that copper deposit is in production.

Another basic difference between the two industries is that the oil industry's product, oil, is consumed. Very little of it ever comes back; a small amount of lubricating oil is recycled, but basically, oil, whether used for heating or for operating a vehicle, or whether used for generating electricity, is consumed in the process of fulfilling its task. Copper is one of the most enduring of all metals. Copper objects that were made at the time of the Egyptians or at the time of the pre-Columbian Indians are still around, and most copper, after its useful life as one particular object has been completed, is subsequently recycled.

This makes for a quite different atmosphere in the whole marketing and development effort. Perhaps one would say that the copper industry, which has been around so long, has learned how to exercise patience, to understand that copper as basically a capital-goods raw material, is very much subject to the swings of the industrial cycle, the economic cycle, whereas oil is used for purposes which by and large persist. There may be some effect on oil consumption if there is a severe recession, but it won't be more than 2 or 3 percent in the course of a year, and in most

occasions, even when there is a recession, the consumption of oil steadily rises.

So we have two very different products here, and it appears that the oil industry executives finally recognized that copper was not something that they could cope with readily, because one way or another, almost every one of the deals that I have mentioned has finally been undone. The properties that Pennzoil took over are now run by Cyprus Minerals. There's another one that I forgot: Amoco Oil acquired Cyprus Minerals years ago, only to spin it off. The Anaconda properties have either been sold or shut down. Atlantic Richfield is not in the copper business. British Petroleum first sold off some of the Kennecott properties and then took its remaining one, the largest, Utah, and sold that to RTZ. Copper Range was acquired first by Echo Bay Mining from Louisiana Land, and more recently became the property of the German company, Metallgesellschaft. And so it goes down the list.

The only one that is still in the business is the only one that did not actually go into the business by acquiring an existing domestic copper producer: namely, Exxon. They have had a fair amount of success with their Disputada operation in Chile. They've expanded production there considerably. The Granduc venture was a disaster for them as it had been for Newmont and Asarco.

Swent: Newmont was never taken over by oil people.

Strauss: No. I didn't say that all copper companies were taken over by oil companies. Asarco, Newmont, and Phelps Dodge were never taken over by oil people. One company that was almost taken over by an oil company was Amax, or American Metal. Chevron, Standard Oil of California, acquired a 20 percent interest in Amax and at one point tried to buy it, offered a very generous price, which the management turned down. And that's really the list of the domestic copper industry. So the story is clear: oil and copper don't mix.

Well, let's shift to some other aspect.

Swent: We're coming into the seventies. We get into a lot of complicated issues.

Strauss: We certainly do.

XVI MARKETING ISSUES OF THE 1970S

1970, Addressing the London Metal Exchange on Two-Tier Pricing

Swent: Where would you like to begin?

Strauss: I was going to suggest, as I've discussed several times, the discrepancies that have existed at times in the past between the United States price of copper and the foreign price of copper. In May of 1970, which is really just coming in to the seventies, I was in England, and my associate John Bendit seemed to have something on his mind. He cleared his throat several times.

But finally, he spoke up the day I was scheduled to return to New York. He said to me, "Simon, I don't know quite how to say this to you, but the committee of the London Metal Exchange have made a request of me. They have invited Prince Philip to be the speaker at the annual banquet of the exchange," which was to be held in October as is traditional. "The prince has explained that he doesn't know whether he will be able to make it or not, and he will let them know probably in August. The committee feels that if it waits until August to line up someone as a speaker, they may have trouble finding someone. So they wondered if you would be good enough to reserve that time, and in the event Prince Philip is not able to make the speech, would you do so?"

I said, "Well, John, I think that probably you can tell the committee that I'd be glad to be the standby for the prince. Of course, should it be that the prince can't make it and I am invited to be the speaker, I would expect to spend the night at Buckingham Palace."

John said, "I think you'd really be better off at St. James' with Princess Margaret Rose."

I said, "Well, let's see how it works out."

In August, John called me on the phone to let me know that Prince Philip had told the committee that he would not be able to make the speech, and consequently the committee would be delighted if I would be the speaker. I said I would be glad to do that, and of course, it occurred to me in 1970 with this very hot issue about what was then laughingly called the two-price system--it wasn't a system at all, because a system is an organized effort, and this was the result of disorganization if anything. But it did occur to me that that would be a good subject for my discussion, and in fact, that was the presentation that I made in October of 1970 to the exchange.[1]

I was flattered, because this was only the second time that anybody from the United States had been asked to be the speaker at the exchange banquet, the previous speaker from the United States having been Robert Koenig of Cerro de Pasco.

My associate and in fact later boss, Charles Barber, made the trip with me. Charles had been a Rhodes scholar and had made a lot of friends while he was at Oxford. He called one of his classmates and friends at Oxford, Admiral Lefanu--

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Strauss: --who was delighted to hear that Charles was in London, and invited him for dinner on Friday night. The LME banquet had been on Tuesday night. Charles explained that he was traveling with me, and the admiral was kind enough to extend the invitation to me as well.

We went to the admiral's home for dinner on Friday night, and as we sat around drinking sherry before dinner, the admiral was full of comments about the lunch he had had on Wednesday at Buckingham Palace. It appeared that the queen had greatly enjoyed the world premiere of the movie *Waterloo*, about the famous battle of Waterloo, which she had seen on Tuesday night. Prince Philip explained that he was not nearly as enthusiastic as his wife about the movie, according to the admiral.

I turned to Charles and said, "You see, I got to make the speech at the LME banquet because Prince Philip had to take his wife to the movies." [laughter] That was one of the more amusing episodes of my life in the metals business.

Well, to proceed now with more serious matters--oh, incidentally, in my speech I expressed the opinion that the market seemed to be able to operate with two different pricing

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[1]See Appendix E.

systems in effect, and while there were advantages to the LME system of pricing copper, there were also some minuses in that domestic producers felt that it was better to try to have a somewhat more stable price, and I didn't see why the two couldn't exist side by side. In fact, they persisted, the two-price system persisted until late in the 1970s, when following the energy crisis, the domestic producers finally decided to abandon any effort to establish their own prices. And since the late seventies, in effect, the price of copper has been the price either as determined on the London Metal Exchange or, in the case of the United States, as determined on the New York Commodity Exchange.

LME and NY Commodity Exchange Prices Revolve Around Each Other

Swent: And are those prices generally about the same?

Strauss: Yes, but they revolve around each other like the moons of Jupiter. There are times when the London price tends to be higher than the New York price, but that's not the usual relationship. Usually, the New York price is higher than the London price by a fraction of a cent a pound. But in general, they do work together.

Perhaps this is a good time to talk at some length about the role of trade associations or in some cases even semigovernmental institutions in the marketing of metals.

Trade Associations: Role in Research and Marketing

Swent: All right, let's talk about trade associations.

Strauss: One of the characteristics of the commodity business is that the sellers of a commodity meeting stipulated specifications, which is the case with the nonferrous metals, cannot claim that their product is really basically different from the product offered by their competitors. Unlike manufactured goods, where a difference in models or difference in the actual functioning of the product, copper is copper, whether sold by one producer or another, provided it meets the specifications set forth by the American Society of Testing Materials or other bodies.

This has the effect of discouraging individual copper producers, or producers of other metals, from spending a great deal of money on research and market development to try to develop new uses, because if a copper producer does succeed in finding some new application for copper as a result of expenditure of funds, his competitors will benefit from it to the same extent as he will. There have been exceptions in the past. When the Aluminum Company of America was the only primary producer of aluminum in this country, it obviously was in a position to reap the benefits of any research or development program it undertook on behalf of aluminum, largely for itself, rather than for its competitors.

In the same way, when International Nickel Company, now Inco, was producing 80 percent of the Western world's supply of nickel, they had a very extensive research program and tried to develop new uses of nickel, with great success, incidentally, and it was understandable that they felt that the expenditure of those funds was justified.

Today, when Alcoa has half a dozen other domestic producers of aluminum, sizeable ones, its research expenditures have been sharply cut back, and International Nickel, or Inco, has actually closed its research laboratories, because whatever it does is going to benefit Falconbridge Nickel, Western Mining, and all the other nickel producers that are in the field.

This is where trade associations come into the picture. In the case of copper, lead, and zinc, I devoted a great deal of my time to the work of these trade associations. I was at one time or another president of both the Lead Industries Association and the Zinc Institute. I was the head of the so-called operating committee of the Copper Development Association. I was a director of the International Copper Research Association. I was one of the founders of the International Lead-Zinc Research Organization. I mention this because a great deal of my time went into working with these associations.

Swent: These are all associations of producers?

Strauss: Of producers. Except that in the case of the Copper Development Association, the fabricators did take a share in the budget. Actually, they had had an association called the Copper and Brass Research Association, which was the predecessor of the Copper Development Association, but the fabricators by and large had less in the way of financial resources than the copper producers, and so the proportion of the budget of the Copper Development Association carried by the producers is very substantial in relation to the contributions of the fabricators.

I made a misstatement just now: the Lead Industries Association also included many of the principal battery users, and when lead was being used as a component of refined gasoline, the consumers of lead were active members of the Lead Industries Association.

Swent: And what is their main goal in this?

Strauss: Their main goal is to help develop the markets, define consumers, to advertise, prepare literature indicating why copper is superior to other products for certain uses. The boards of these associations are usually made up of representatives from the member companies. There is a professional staff engaged which makes a career out of working full time on the job.

Just as an example, the Copper Development Association has built several model homes in which copper is widely used for roofing, flashing, obviously for all the electrical wiring in the house, for the decorative hardware, and with the development of solar power, installations which featured the use of copper in connection with capturing the sun's rays and transmitting it to heat. And the same thing applies to the Lead Industries, Zinc Institute, and the other trade associations.

Swent: Do they do governmental lobbying too, legislative work?

Strauss: It varies. Some of the associations strictly keep hands-off, feeling that the American Mining Congress, as an example, and other organizations can take care of that. Once one undertakes the field of lobbying governments, you're subject to registration with the authorities and the kinds of--

The Lead Industries Association Pioneered Health Research

Swent: There are indirect ways to--

Strauss: Well, a good example of the kind of things that may be done by a trade association to influence government thinking on subjects is the work that the Lead Industries Association had done for many years on lead and health problems. Whether this has changed anybody's mind or not, I am not prepared to say, but the fact was that the effort was made. The whole question of blood testing of children to determine the levels of lead in the blood, that was really pioneered years ago by the LIA before the environmental issues became as important or as much in the public consciousness as they are today.

I said that I gave a lot of time to the work of these associations. I don't mean to imply that others didn't make equal contributions. Usually in these organizations, the chief executive officer may be the member of the board of directors of the association, but the work tends to fall into the lap of the people engaged in marketing. Because the real objective of having the trade association is to expand the market for the material.

And we have to deal very often with minor issues like, for example, new plumbing codes in municipalities. Is lead solder permitted or is it not permitted? Are there advantages being given to plastic tubing for plumbing as compared with copper tubing? So there's a great deal of nitty-gritty detail work which the staff has to count on, and it's only right that this should be done on an industry-wide basis rather than by the individual producers, because if each of the individual producers is attempting to accomplish something in this field, there will be a great duplication of effort. There may even be inconsistencies developed in the approach, which will confuse the consumers.

Forming the First Silver Institute

Strauss: So I'm a great believer in the trade association approach to certain of the problems facing our industries. So much so that after the events that I've described earlier in regard to silver in coinage and the recognition that the silver industry would have to develop other outlets for silver production, I, together with I think it was either eight or ten other representatives of other silver-producing companies, caused the formation--I think the year was 1971--of the Silver Institute. There had never been a trade association of silver producers prior to that.

The example of the Silver Institute was such that in time the gold producers decided they needed a Gold Institute. I had not been active in that regard, because Asarco at that time was not a major gold producer. And there are even trade associations which have carried on efforts for such minor metals as selenium and tellurium. There frequently are people who work for these associations that eventually are offered jobs in industry by individual companies, or there have been other occasions when people working for companies have continued their careers as association employees. There is a lot of exchange of ideas and cooperation between the individual companies and the association.

Chairing the American Mining Congress Committee on Minerals Availability

Strauss: One organization that I spent a lot of time with was the American Mining Congress. Most of my work there was concerned with the question of government relations with the mining industry in regard to the problems of supplies of strategic materials in times of national emergency.[1] I mentioned earlier that the stockpiles were enacted into law following the end of World War II when Congress passed a bill that set up a stockpile program to be handled originally by the Army-Navy Munitions Board; later it was transferred to the Federal Emergency Management Agency. That isn't exactly the right name, but it's changed so often that I've lost track how it--.

The stockpile objectives, however, were established primarily by interdepartmental committees, including representatives from Agriculture, Treasury, State, Interior, and the military services. The thought was that the stockpiles should contain sufficient quantities of scarce materials so that this country could face a war or other emergency of an agreed length of time. The length of time has varied from three years to five years to one year, and there has been constant manipulation of the stockpile objectives.

The phrase that was devised by the industry originally and agreed to by the Congress was that the stockpile should be locked up and the key should be thrown away, or put away, and only be used in times of genuine emergency. There are frequent occasions when temporary shortages occur and people in industry want to get access to those stockpiles because of sharp increases in the commercial prices. And the debate about the value of the stockpiles has been fierce and continuing.

What is often overlooked is that the value of the stockpiles is not only in that the materials themselves are physically available in time of emergency, but that the possession of a stockpile permits a government to save transportation, manpower, and energy in times of war or other national crisis. I've referred several times in the course of our discussions to the heavy loss of shipping during World War II. Had there been a large stockpile of bauxite in this country, much less shipping would have been devoted to bringing the bauxite up from South America through the Caribbean.

We've referred to the fact that the people working in the domestic copper, lead, and zinc industries were deferred. This meant that truck drivers, shovel operators, engineers, who were

[1]See Appendix G.

employed by the mining industry, who had the skills that the army engineers and the navy seabees really needed, were deferred from service, and instead people like my brother-in-law, who was a jewelry salesman, were trained to be engineers. Had the military services been secure in the knowledge that there was a reasonable supply of these materials in the stockpile, they would have been able to use people who were already trained to do the jobs that were needed by the seabees and the army engineers.

Swent: And have been mobilized a lot faster.

Strauss: Exactly. Lives might have been saved. And with respect to energy, it takes seven to eight kilowatts of electrical energy to produce a pound of aluminum. If we had a stockpile of aluminum in place, so my argument goes, in times of war, instead of facing possible brownouts or shortages of electrical power, we wouldn't have had to push as hard as we did to increase aluminum production. So these are the arguments for having a stockpile.

The arguments against it are, well, we don't know what kind of a war we're going to fight. If it's a nuclear war, it may be over in a matter of months. Why have a three-year stockpile? Another argument is that we're tying up a great deal of money in commodities, and therefore it's a burden to the taxpayer. Some people see the stockpiles as a sort of a subsidy to the minerals and other industries, although the bulk of the commodities in the stockpile are minerals.

All of these considerations are valid, and the weighting of them changes.

Swent: It can also be used as a political weapon.

Strauss: Yes.

Swent: Or maybe not weapon; lever may be a better word.

Strauss: Lever, exactly. I think a great mistake was made in setting the original objectives for the tin stockpile. Much too much tin was put into the stockpile. Since the middle fifties, tin has been coming out of the stockpile. This has annoyed Malaya, Bolivia, Indonesia, because that's competing with their current production and they feel that it has unfairly undermined the price. So it does become very much of a weapon in international relations.

Swent: The Soviet Union has definitely used theirs, haven't they?

Strauss: Yes, they have. So it's not a black and white situation. There are arguments for and arguments against, and the public feeling

about it today is certainly much different from what it was in 1946, when Congress enacted the bill right after the end of the war. It was clear to everybody then how advantageous it might be to have large quantities of materials on hand. The bill went through with no opposition in 1946. No one said, "Well, we're at peace and we won't need a stockpile."

And one final thing which I think in regard to the minerals in the stockpile is interesting, and that is from the national standpoint, if--and perhaps this will not happen now that the Russian empire has dissolved, Soviet empire has dissolved--but one thing that the stockpiles do is they create reserves of minerals above ground, which are here to serve the country at a future date. Unlike agricultural commodities, minerals are not really going to deteriorate. There may be some problems in that, for example, some of the metals may oxidize to a certain extent, you may have to clean them up to make them usable at a time of emergency. But basically, they will be on hand, and they will be an asset for future generations.

The Paley Commission report that I referred to before stressed the question of whether we weren't depleting the resources and our grandchildren were not going to have them. Well, the resources in the stockpile in a sense are a legacy for future generations. So it's an interesting discussion and one that I'm sure is going to continue indefinitely. Currently, the stockpile objectives have been greatly reduced. Some stockpiles have been eliminated or are expected to be completely eliminated. All of the silver in the stockpile is scheduled to be used, but it will be used primarily in the production of commemorative coinage rather than sold in the open market in competition with current silver production.

Importance of Stockpiling Platinum and Palladium

Swent: What has been your advice on this? How have you felt about it?

Strauss: Well, I have felt that on the whole, there are more arguments for having a stockpile than for not having one. I think it is more important to stockpile those materials where there is little or no production in the United States than to stockpile materials that are produced in the United States. So I would give relative weight to that. Instead of having the stockpile objectives fluctuate depending on momentary technical developments, which is the way it's happened for the most part--for example, platinum and palladium are important in connection with the control of

vehicle exhausts. There are catalysts in cars now that deal with the noxious elements in the exhaust, and they contain platinum and palladium. As a result, the platinum and palladium objectives have been greatly increased.

But there are other times when they have been cut. Now, platinum and palladium seem to me to be peculiarly desirable for stockpiling, because the two principal sources are the Soviet Union, or what was the Soviet Union--currently Russia--and South Africa. The political uncertainties in both those countries persist today. Even though we're no longer in the Cold War, the fact is that the Russian economy is in a very uncertain state. And certainly South Africa, while it has emerged now as a multiracial society, who is to say whether its future road is going to be tranquil or whether there won't be serious problems, possibly civil war, revolution, racial conflict, which would interfere with the production of those essential elements. So I think it's a real asset to this country to have them on hand.

I cited early on the example of the industrial diamond experience where an honest and patriotic diamond expert assisted the government by making it possible to liquidate a portion of the stockpile, and reap from those sales a sum of money that was substantially in excess of the original cost. The stockpiles that were acquired during and in the few years immediately after the war cost a fraction of what the prices of those commodities are today. Now, partly this is of course the result of inflation, but it does show that these items have a value that is retained there, and for that reason, I don't think it is in the best interest of the taxpayers to liquidate the stockpiles in such a way as to depress prices of the materials while they're being sold.

Swent: What do you think would be a reasonable goal? Three years, five years, one year?

Strauss: Oh, I think it varies. I would certainly have three years of materials where we're more than 50 percent import-dependent. I think materials where we are more self-sufficient, a one-year stockpile would be adequate. But it's very hard to take a rational view of this question.

Swent: To whom have you been able to communicate all this? Have you pressed where you could?

Strauss: I have communicated this to literally hundreds of members of Congress and scores of senators who sat on the committees that have had hearings on stockpiles.

Swent: Have you had any effect, do you think?

Strauss: I think modest. The Armed Services Committee of the House was for years chaired by a remarkable congressman by the name of Charles Bennett who came from Florida. Charles Bennett had a genuine interest in this question, and he has the remarkable record of never missing a vote while he was in the Congress. He repeatedly refused my suggestions that he come out and give a speech at the American Mining Congress meeting, because he said, "Congress will be in session, and I can't be away from my desk." Whereas many other members of Congress did come out and did make speeches.

Anyway, Mr. Bennett is retired. I think he and I saw eye to eye on many of these issues, but it's like a drop of water on a stone once an hour. It takes a long time to make a real impression on this issue.

Swent: And new congressmen coming in all the time.

Strauss: All the time, they will have to be reeducated. They weren't around during World War II and don't realize the enormous effort that was made, which I saw first-hand as an executive of Metals Reserve Company, the lives that were put at risk in order to get access to strategic materials. So it will continue to be an item for debate, I'm sure. My connection with it--

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Swent: You were saying that for many years you chaired the committee of the American Mining Congress on minerals availability.

Strauss: That's correct, and the stockpile issue was in its--. I am no longer a member of that committee. The organization has kindly given me the title of chairman emeritus, and on occasion I do meet with the committee, but the occasions are not many, and I have not testified on the issue in, I would say, about ten years. So I am on the sidelines on that issue today, but--

Swent: It's hardly a moot issue, though.

Strauss: Yes. Correct. I was very active, I suppose I made forty or fifty appearances before congressional committees on the stockpile issue during the years that I was at Asarco.

Swent: That's why a tape recorder doesn't scare you now.

Strauss: That is correct. I also spoke for the Mining Congress on some other issues like trade issues, and I think I said earlier on the

silver coinage issue, I represented silver producers and later the Mining Congress in regard to that matter. So I tried to be helpful to the Mining Congress and prepared some of their pamphlets. That took up a good deal of time.

Swent: Are there other nations that stockpile--we know the Soviet Union did, but do the nations of Europe, for example?

Strauss: They've had debates. The French had very modest stockpiles. The British used to talk about it, but never did. They don't have the national resources to do it. The Japanese have had some stockpiles, but while they cover most of the essential materials, they tend to be for three months or six months. I think the Japanese don't regard them as necessary or defense related. I think they're there to guard against interruptions of supply if there were shipping strikes or something of that sort. So those are the principal ones. I think Sweden had some stockpiles for a while, and the Swiss. The Swiss, of course, are very close-mouthed about what they do and what they don't do, but my impression is that they have, since they're totally import-dependent; there is virtually no mineral production of significance in Switzerland.

Advisor to the International Lead-Zinc Study Group

Strauss: So perhaps a logical matter to move on to after this discussion of stockpiles is my connection with governmental organizations of various kinds. Perhaps my most enduring and interesting assignment was as a member of the advisory committee to the U.S. delegation to the International Lead-Zinc Study Group.

I have earlier referred to the U.S. import quotas on lead and zinc that caused a good deal of fuss. Sometime in the sixties, the principal producing countries concerned with lead and zinc and many of the principal consuming countries agreed that it would be useful to have an international group under the wing of the United Nations to discuss the problems of lead and zinc. The pressure for this came primarily from the four big lead-zinc exporting countries: Canada, Peru, Mexico, and Australia. But the United States indicated it was willing to join. The United Kingdom, which is primarily a consuming nation, France, Western Germany, Japan, all agreed.

And so several meetings were held in New York at the U.N. to discuss what, if anything, could be done to cope with the problems of surpluses and deficits or shortages of these two

metals. There was a general consensus on one problem, and that was that the lead and zinc statistics weren't as good as they might be, and that actually this group, after it was formally chartered by the U.N. as an international study group, set up a monthly statistical bulletin. All the member countries were asked to contribute their official statistics.

This is fine, except that some of the countries are a little more careful in compiling their statistics than some of the others. But once a year, the group meets, usually in Geneva, but it has also met in such places as Munich, Mexico City, Tokyo, Malaga in Spain, and there may be others that I don't recall. Once a year, there is a meeting. The official delegates to the study group are always government employees. In the case of the United States, it is usually someone from the State Department with the advice of somebody from Interior and somebody from Commerce, but also with the advice of a group of industry people.

There was some concern about Asarco's being represented in the group because Asarco was not only a lead and zinc producer in the United States, but it had the Buchans lead-zinc mine in Canada, it had its operations in Mexico, which were subsequently Mexicanized, and it had its large interest in Mount Isa in Australia. I think some people said, "Well, you know, if Asarco is here, they're going to be conferring with the Mexicans, the Peruvians, Canadians, and Australians, and maybe things that we want kept confidential aren't going to be quite so confidential." It was a tricky issue. But finally, the State Department indicated they did want somebody from Asarco to go, and for the first ten or fifteen years, I was the person. There were also representatives from St. Joe, American Zinc, National Zinc, American Metal, and other companies.

The meetings were very interesting because you had an opportunity to talk to everybody from around the world during a brief week in Geneva or wherever it might be. And I think some useful work was done, but I can't say that it has really revolutionized the lead and zinc business.

Swent: A lot of fun for the delegates.

Strauss: It was a certain amount of enjoyment.

Swent: It must have been very interesting.

Strauss: Yes. Speeches were made. The Peruvian delegate for years was the Peruvian ambassador to the United States, Fernando Berckemeyer. His wife was a lady from San Francisco, I believe. Fernando was a very good friend of mine, and he didn't really

have much of a feel for the lead and zinc statistics, so he used to lean fairly heavily on me to explain to him what was being said and why. In fact, if truth be told, he spent as much time reading the daily *Racing Form*, because he was a great follower of racing, as he did listening to the proceedings. But when he spoke, it was as a result of instructions that he got from Lima.

There were a number of very distinguished people who were involved in the organization. The U.S. delegate, the first delegate was a chap named Nichols. When he was replaced in the commodities end of the State Department, the next man was I think Harlan Branson, if I remember correctly. I recall his being the leader at our meeting in Mexico City.

And then eventually the official delegate was Charles Carlisle. Charles Carlisle was a particularly effective spokesman. Eventually, he left government service and worked first as the head of the domestic U.S. Lead-Zinc Producers Committee, and later became a vice president of St. Joe Lead. When St. Joe Lead was acquired by Fluor, he left to return first to government service--he worked in the ITO, the trade--that isn't the correct initials--but the office of international trade, being given the rank of ambassador. And most recently, until last year in fact, he was the number two man, the deputy secretary general, of the Conference of the General Agreement on Trade and Tariffs, GATT.

So his judgment and his abilities were widely recognized, not just in the metals business but in the broad international trade business. I think he's now a consultant on trade matters with offices in New York. Charles didn't have much of a background when he started on this in metal production, and he depended on his industry advisors to a great extent.

There was talk for many years about forming a similar study group on copper. It started while I was still at Asarco. It's finally materialized about two years ago. In this case, for reasons which I don't know, the official U.S. delegate is not from the State Department but from the Commerce Department, a gentleman by the name of Bob Riley. They're just beginning to talk about improving statistics and so forth. It will probably be a useful way of exchanging information about copper developments, but like lead and zinc, I think the net effect is not going to be substantially changing the nature of the trade. So I have played no role at all in this copper study group.

A Committee to Update the Paley Report

Strauss: I was asked during the Carter administration to serve on a commission, and we met for two years. It was the Commission on National Growth Policies, one of these fancy government--

Swent: They all begin to sound alike, don't they?

Strauss: They all begin to sound alike. The purpose of this was to really bring up to date the kind of considerations that the Paley Commission had had in 1950, and was there a big problem, wasn't there a big problem. We issued a report which, as usual, is gathering dust somewhere. But these things all took a lot of time and effort, and could not be ignored, because if people who are knowledgeable will not participate, then the results of some of these studies could really be quite damaging.

Lecturing to the War College on the Nonferrous Metals Industry[1]

Strauss: For quite a few years, I was asked by the War College in Washington to give an annual lecture on the nonferrous metals industry to the people at the War College, who are people at the rank of majors or colonels, or lieutenant commanders and commanders in the case of the navy. It was an assignment I really enjoyed because the problems were new to most of the colonels, but they asked very good questions.

Swent: And that's, of course, where the question of metal supplies becomes most acute.

Strauss: That's right. Because they have some weird ideas about metal. This is going back to the days of World War II. I never will forget the day that the fellow in charge of producing galvanized pipe at Bethlehem Steel told me that he'd had a hurry-up call from the colonel who was in charge of construction of a barracks somewhere, and Bethlehem was a little late in making delivery of the pipe to this barracks site. The colonel said, "What's holding it up?"

The Bethlehem chap said, Well, the pipe had been produced, but it hadn't been threaded yet.

He said, "Well, ship the pipe now, you can ship the thread later." [laughter]

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[1]See Appendix H.

Swent: Oh, no! How could he be so ignorant?

Strauss: I just mention that--you sometimes have to deal with things as basic--.

On another occasion, an army officer asked me to give him the location of the country's major brass mines. [laughter]

Swent: Oh, for heaven's sake. So there was some fundamental education to be done.

Strauss: Yes. Also, I was used by Asarco on many occasions to deal with people at the World Bank, at Ex-Im Bank, and at the State Department with regard to problems we had with some of our overseas operations or in connection with financing. But the main burden of that was actually handled by people in Asarco's legal office.

Swent: Did the CIA ever try to use your offices overseas?

Strauss: They used to ask me questions.

Swent: As a listening post?

Strauss: They never asked me to go overseas, but they would talk to me about issues from time to time. So I'm trying to explain to you what occupied my days at Asarco.

Asarco's Involvement with Uranium

Strauss: But perhaps we ought to go back to a question you asked me, which was Asarco's involvement in uranium.

Swent: Yes.

Strauss: When the AEC made its fateful decision to institute a program to offer a firm price, which as I recall may have been eight dollars to start with, but eventually became ten dollars a pound of U_{308}, it was clear that they were going to have to establish buying stations close to the areas where uranium was developed, and it was clear to me then that originally, the AEC thought of this as a political gesture to satisfy the Western congressmen that everything was being done to encourage domestic uranium production, but they did not expect much in the way of results.

Swent: This was about, when, late forties?

Strauss: Late forties, I think.

Swent: After the war?

Strauss: After the war. They knew that they were going to be producing a lot of atom bombs. They also believed that there was going to be development of atomic power, and that therefore, substantial amounts of uranium would be needed, and there was big pressure from Congress where members said, "We can't allow ourselves to be dependent on imported uranium, we've got to do everything we can to develop domestic uranium." So this decision was made to offer a guaranteed price for a considerable period of time. Ten years is a long time.

From my limited conversations on the subject with AEC personnel--

Swent: AEC was the Atomic Energy Commission--

Strauss: Yes.

Swent: --which was set up to handle this whole thing.

Strauss: Yes. You may remember my namesake, Louis Strauss [pronounces "Straws"], as he called himself, was the head of that for many years.

I had the feeling from talking to AEC personnel they didn't really expect much to happen. They were skeptical that there was going to be much uranium found, and as you remember, everybody and his uncle rushed out and bought geiger counters and started heading for the hills, and the results far exceeded their expectation. But they did know that they had to be ready with buying stations scattered around the country, and they came to Asarco--not to me, but to the people in the ore department in Asarco--and said, "You have to help us, because you have more expertise in how to go about buying ore than anybody else in the country," which was true. We bought from very small miners. For example, we'd have people who shipped one carload of handpicked gold ore a year to our East Helena smelter, and we'd make contracts with them, and we understood how to deal with them, what arrangements should be made in regard to payment, weighing, sampling, assaying, and so forth. AEC needed guidance on that, and they asked Asarco to provide the guidance.

In order to insure that there would be no conflict of interest, they also said to Asarco, "We will appreciate very much your guidance, for which we will not pay you anything, but you're not going to be permitted to go into the uranium exploration

business yourself, because it would be a conflict." So Asarco abstained from exploring for uranium.

Swent: And you weren't paid for your consultation?

Strauss: No. The individuals, several people who either were Asarco employees or who were retired Asarco employees, I believe went to work for them. One I remember in particular was a chap named Martin Gaines, who I think had been an ore buyer in Colorado, and he became an AEC employee.

Swent: But you were closed out, then?

Strauss: Yes, we were closed out, and we didn't consider going into uranium, until several years later when the program was well established, and AEC indicated that there wouldn't be any objection if we wanted to. But the exploration department wasn't particularly eager to join the hunt. Other people had gotten so far ahead of us.

Swent: So you never did any?

Strauss: No, we did not. The head of the raw materials division of AEC for years was a man named Jesse C. Johnson. He and I had worked together at Metals Reserve, and we were good friends. I used to see Jesse on occasion when I was in Washington, and he was good enough to invite me to attend the ceremony at Columbia University where he was presented with the Monel Medal--you know about that?

Swent: I remember the term, and that's all.

Strauss: It was not given out very frequently. When he was given the prize, he was the guest of honor at a very nice dinner in the Columbia library, and my wife and I were invited to attend. But that was on a personal basis because we had been such good friends. He was a great fellow, and he did a wonderful job. I have been trying to drum up some support for electing him to the National Mining Hall of Fame, but I don't think I'm getting very far.

So that's the story on uranium.

XVII THE TUMULTUOUS 1970S

Nixon's Price Freeze and the Rocketing Copper Market

Strauss: With regard to the seventies, I would say that that decade was split in two. The first four years, which were years of great expansion in business, more perhaps in Japan than anywhere else in the world. Those were the days when the Japanese were really beginning to feel their oats and spreading their wings, building automobiles, building copper smelters and refineries, developing their transistor business, developing their computer business--

Swent: Shipping.

Strauss: --and shipping. They were everywhere. And they dragged up the rest of the world economy with them, because they were experiencing a 10 percent growth annually in gross national product, which is fantastic. The United States was doing very well.

And then in late 1973, early 1974, the oil crisis developed. So the rest of the decade was really almost totally devoted to dealing with the question of the energy crisis, how were we going to cope with it, and of course, in the background, the issue that you mentioned, the environment, was heating up month by month, year by year. So the metal markets were very strong in the early seventies and extremely volatile in the latter part of the decade.

In the early part of that period, you may recall that President Nixon in 1971 had cut off the tie between gold and the dollar at thirty-five dollars an ounce. He had seen the steady diminution in the gold reserves of the United States, he was fearful that the dollar was being adversely affected in international trade by our continuing to tie ourselves so tightly

to gold, and he made that change. Then he followed it almost immediately by a price freeze. Do you recall that?

Swent: I had forgotten the price freeze.

Strauss: Yes. And the price freeze--

Swent: That was '72.

Strauss: Actually, late '71.

Swent: Yes, I've got it here.

Strauss: That price freeze revived the whole issue of the two-price system in copper, for example, because the copper market took off like a rocket in the middle of '73. Under the Nixon formula, the domestic producers were held to the highest price in 1970, which had been sixty cents a pound. By the end of 1973, the London Metal Exchange was a dollar a pound, and the distortions were just enormous. Obviously, foreign copper was selling at the LME price whether brought to the United States or anywhere else. The consumers were screaming for cheap copper. Obviously, they took all the copper they could get at sixty cents a pound. There were no problems in selling the commodity.

But the scrap dealers began to export in droves. For a while, the government talked about imposing embargoes on scrap, and the scrap dealers said, "You can't do that to us, we can't get the scrap unless we can pay the world price for it." And finally, scrap was exempted from the price freeze so that scrap could be sold to consumers at world prices, and foreign copper could be sold to consumers in the United States at world prices. The only people who couldn't sell copper at world prices were the domestic producers. The situation wasn't as aggravated in lead and zinc, but in copper, it was horrific.

Swent: Then had the nationalization in Chile--

Strauss: Had taken effect. Part of the reason that the LME was as strong was that under the Allende administration, the production of copper by the government-owned operations had gone straight down. Allende had adopted the communist system. There was a political representative assigned to every production unit of everything, but particularly for the copper industry, and the decisions were made by the political representative and not by the marketing people or the engineers. Chilean engineers by the droves left the country. The quality of Chilean copper deteriorated. I said that copper is fungible, but there were some customers in Europe who told me that under no condition would they take Chilean

copper, because the wire bars looked like a horseshoe. Instead of being nice straight bars, they drooped at both ends, the casting was so poor. So naturally, this caused a scramble for good copper, Chilean production being as important as it is in the market.

Swent: Of course, costs went up astronomically at the same time.

Strauss: Yes, right. So this was a very difficult period, but a prosperous period for the industry, because the production was being so--. One of our customers had installed a facility for the production of continuous cast rod, which is--

Swent: That was the big new development in technology.

Strauss: That's right. That was beginning to replace the wire bar as the standard refinery shape. This fabricator had installed his rod unit in Utah close to Kennecott.

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Swent: Do you want to name the consumer?

Strauss: No. He had put into effect a process, no longer actively used, for producing a continuous rod called the dip forming process. It had been developed by General Electric. You fed a copper wire into a bath of molten copper, and the copper adhered to the wire as it traveled through that bath, and that created the rod. Obviously, there were some oxygen inclusions which had to be taken off, and it was also necessary to ensure a uniform diameter. So a certain amount of scrap was inevitable.

However, this chap was not interested in rod; he was interested in scrap. He was buying copper for sixty cents but taking off as much of the rod as possible as scrap. Of course, he had to produce some rod, otherwise Kennecott would stop supplying him. But the more material he took off as scrap due to alleged imperfections, the more copper he could sell for a dollar a pound without ever bothering to produce wire. You see, because scrap wasn't controlled. And once again, this is an illustration of how attempts to regulate markets result in all kinds of peculiar things because people are ingenious and they figure out ways how to get around regulations. It was comparable in a way with the agricultural wheels that I told you about for Mexico.

So the effort continued to impose these price ceilings. As I remember it, the government at this point was authorized to sell copper from the stockpile. The Federal Emergency Management Agency, FEMA--

Swent: They're the ones who come in after floods--

Strauss: And earthquakes, yes. But they also had the stockpile under their control at the time. The FEMA officials were authorized to sell 120,000 tons, something like that, of copper that they had in the stockpile. This was in late 1973 and early 1974 when Mr. Nixon's price controls were still in effect. However, FEMA said they were not a domestic producer, therefore they were not subject to the controls. They put the stuff up for auction, and here's the government on the one hand telling producers they cannot sell copper for more than sixty cents a pound, and selling the copper at--I think the peak price it got was something like $1.15--

Swent: From the stockpile.

Strauss: Stockpiled copper sold to consumers at $1.15 a pound. I accumulated all the facts there, and Senator Goldwater made a little speech about that on the floor of the Senate. But that was outrageous, for the United States government on the one hand to say that to combat inflation, we have to control the prices, and on the other hand, to auction off its own product and get a price almost double what the producers were allowed to get.

Well, I think it was in December of '73 or maybe early in '74, I forget the name of the professor--was it Sawhill? Yes, John Sawhill--who was in charge of this price control effort for Nixon, agreed with great reluctance that the domestic copper producers could raise their price from sixty cents a pound to sixty-eight cents a pound. So we moved up that far, but no further.

Finally, I think in either the end of March--yes--the price controls lapsed, the authority to continue them, and they were so unpopular by then that there wasn't any possibility of getting Congress to extend them. The domestic industry was in a position to raise the price. The price was raised; there were labor negotiations underway, and it was a big problem. If we raised the price, the union was going to want more and more share of it. If we don't raise the price, we're not taking advantage of what we've been asking for all along. So the prices were raised, I think perhaps the price increase came on May 1 or June 1, for domestic producers.

The Energy Crisis and Unparalleled Price Fluctuation

Strauss: By July, the London Metal Exchange, because the energy crisis was beginning to take off, suddenly started to quote lower prices. By September or October, the U.S. price, which had been so much lower than the world price, was now above the world price. [laughs] It was the most absurd situation that the domestic copper industry was in.

By the end of the year, the London price--if I recall correctly, at the beginning of 1973, the price of copper in London had been something like fifty cents a pound. By the end of 1973, it was well over a dollar a pound. It got up to maybe $1.20 a pound in the spring, and by December 31, 1974, when it was clear that a full-scale recession was setting in, it was back down to fifty-seven cents. And this is just like the king of France marching his troops up the hill and then marching them down again. It was the most dramatic episode in all the years I've been in the copper business, I've seen a lot of fluctuations, but that two-year period was just unparalleled. The other metals also changed a lot, but not anything like that.

Now, one of the interesting consequences of the energy crisis was that it wasn't just the price of oil went up. In time, the price of coal went up, the charges for hydroelectric power, which theoretically shouldn't have had to change at all, began to move up, the aluminum companies, whose principal cost was power, seven or eight cents per pound of metal, suddenly found themselves forced to increase prices in the face of a recession.

Swent: And that affects the copper market.

Strauss: That affected and helped the copper market, because the big price advantage that aluminum had had over copper began to disappear.

An even more drastic effect came from the fact that the London Metal Exchange, which had never traded in aluminum, started trading in aluminum. You'll find the year in my book, I specify the date when it started. And suddenly, aluminum began to look more and more like copper. In the past, copper consumers had always said, "Why can't you be more like aluminum?" But as a result of the energy crisis, the rise in costs, the increasing number of aluminum producers, many of whom were government organizations in the Middle East and in Latin America, and finally the decision to trade aluminum on the LME, it was no longer, "Why can't copper be more like aluminum," rather it was, "Why is aluminum becoming so much like copper?"

And that has been the case ever since 1974. The growth in aluminum consumption since 1974 is roughly the same as the growth in copper consumption, whereas in the period from 1950 to 1974, consumption of aluminum on a world basis had risen more than 8 percent a year, compounded, as against 4 percent a year compounded for copper. Copper began to recover some of the uses that it had lost through substitution to aluminum. My advice to customers was, "Use the best metal. Forget about the price, because from now on, you're not going to find the aluminum price any more predictable than the copper price."

Swent: Copper is a better conductor, isn't it?

Strauss: It's a better conductor of electricity and a better conductor of heat. Aluminum has advantages. It's lighter, it's far more abundant. There's little likelihood that we'll ever have a shortage of aluminum. Someday, perhaps, we'll have a shortage of copper, although with the success geologists have had in recent years in finding new copper deposits, that day is pretty far off, in my judgment.

So it's been a fascinating reversal of roles, and I've commented in my book repeatedly, not only aluminum, but nickel and molybdenum, the two other metals which like aluminum were dominated by a major producer--Climax in the case of moly, Inco in the case of nickel--were researched and resulted in a big growth in the consumption patterns where prices had been kept quite stable, they're now in the same category that there no longer is price stability. They no longer have what the economists call oligopoly-dominated markets, they have competitive markets as we do. So it's been a fascinating change, really.

How are we doing on time?

Swent: It's ten after four.

Strauss: We can go on for another half-hour or so.

Swent: The environmental movement, and then the big strike, those would be a couple of things we might try to get to.

Strauss: Yes. Well, the big strike--

Swent: Wasn't there one in late '70 also?

Strauss: Well, not nearly of the same extent. There was the strike at Phelps Dodge, but that wasn't industry-wide, and that was the

strike I think you were thinking about where the troops were called on, and I'll talk a little bit more--

Swent: But that was just Phelps Dodge.

Strauss: Yes.

Another subject is going to be Bunker Hunt and the gold and silver situation. And then we'll talk about Magma and my post-Asarco career, but that can all come after we've dealt with these issues while I was still at Asarco.

Consequences of the Freed Gold Price

Strauss: I think we ought to say a little about gold now, because we've talked about silver at some length. When Mr. Nixon cut the tie between the dollar and gold at thirty-five dollars an ounce, there were people who said, "Gold is not an industrial material. If gold is not going to be tied to money any longer, the price of gold is going to drop." The *New York Times* said this in an editorial. They really believed that people would not be willing to pay as much as thirty-five dollars an ounce any longer for a commodity that was not in demand from industry, to any major extent. There are some industrial uses of gold, but the big use is jewelry, which can hardly be described as an industrial use. Most or much of the jewelry use is tied in with people's perception of gold as a store of value.[1] If it was truly felt that the U.S. decision to stop buying gold at thirty-five dollars an ounce meant that gold was no longer to have a monetary role, would people feel, well, there's no use holding on to gold? It isn't tied in with money.

Of course, the reverse of that happened. Right from the start, the price of gold started to rise. For a while, the rise was very modest. But then Congress, recognizing the inevitable, repealed the restrictions on the ownership of gold by U.S. individuals, restrictions that had applied since 1935 or '34, when the thirty-five-dollar-an-ounce price came in. When that was repealed, a lot of American citizens began to think, well, it wouldn't be bad to have some gold. And more than that, people in other countries began to think that. We saw gold coins being offered to the public as the holding of gold coins became legal.

To show how stringent the restrictions had been, I had had an interesting experience returning from a trip to Japan shortly after the Olympics were held in Tokyo. I had been given by the

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[1]See Appendix L.

Japanese manufacturer of the Olympic medals a little plastic box containing a gold, silver, and a bronze medal, as if I had won the hurdles. It was very nice of them to do it. They gave it to me because Asarco had been their principal source of silver for the manufacture of these medals.

On my return from Tokyo--this was in the middle sixties--I had to call on one of the officials of the Treasury, Leland Howard, to discuss the silver coinage issue with him. I mentioned that I'd been in Japan, and I mentioned that I had brought a gold medal back. He said, "That's illegal. You can't have that medal unless you won something."

"Well," I said, "didn't you read that I won?" [laughs] But that was a fact. I had apparently innocently contravened the law by bringing--. He didn't inform anybody about it--

Swent: Didn't prosecute you.

Strauss: No. Nobody's ever taken my medal away from me. But that was a fact.

At Asarco, we could only sell gold to people who had licenses from the Treasury to hold gold. They had to account to the Treasury for how much gold they had on hand and what they used it for and so forth. It was very strictly controlled. Well, Congress recognized that it was ridiculous to keep this restriction on, after the Treasury said in essence that gold has nothing to do with our money, so that bill was repealed, and people were in a position to start owning gold coins, gold medals, or whatever form of gold they chose to have. And the demand increased, in spite of the severe recession throughout the world, because there is this mystical link between people and gold that no amount of legislation can gainsay.

Swent: You can't convince a billion Chinese not to want gold.

Strauss: No, no. It's in our culture; it's certainly in their culture. It's been in every civilization that you can mention, that gold has been prized and valued. So the price gradually started to rise, but it didn't really take off in a big way until the end of the decade, when Nelson Bunker Hunt began to speculate in silver, and it sort of rubbed off on gold. The rise in the price of silver was much sharper than in the price of gold, and it had weird effects.

Swent: That must have been a real shock to you.

Strauss: I had expected silver to go to five, six dollars an ounce. That it would go to fifty dollars an ounce I had not expected. I think I told you earlier that I had accumulated silver coins, expecting that eventually they would be worth more than the face value, so I had a lot of dimes and quarters and half-dollars that I kept put away in a drawer. I never went into a bank and changed money for coins. I saved coins when they came into my hands through ordinary transactions.

But when the Hunt operation started the price began to escalate, it was around September or October of '79, and by the end of the year, it was up around twenty dollars an ounce. Then in January it was absolutely fantastic. I made a decision that I would sell ten dollars face value of coins each week to a coin dealer, just to see what was going on in the coin shops. It was a way for me to go in there and not just stand around and perhaps be suspected of planning to hold the place up or something. So once a week, I would walk in, either with 100 dimes or forty quarters or twenty half-dollars, and exchange them for money.

The Ten-Dollar Brown Tweed Suit and the Silver Market

Strauss: The best exchange I made was in January of 1980, when I took forty quarters of no numismatic value and got a check for $300. My ten dollars worth of coins gave me $300. There was about seven ounces of silver in them. That week, a local men's clothing store in New Rochelle had its annual January clearance sale. I was about to leave to spend the month of February and most of March in Tucson lecturing at the university. I decided I needed a suit to travel in. They had a brown tweed suit that I liked very much that had been knocked down in price. I bought it for $299.

When the Rotary Club in Tucson asked me to talk about gold and silver at their weekly luncheon meeting, I wore this suit. I said, "There's no way I can explain to you what's going on in gold and silver better than by telling you that I am wearing a ten-dollar suit," and I explained that I had exchanged my ten dollars in silver coins for $300 in cash, and then used $299 of it to buy that suit.

Swent: Pretty dramatic illustration, isn't it?

Strauss: There was a drug store in the building where I had had my office when I was in Washington that I passed by on one of my visits to the American Mining Congress. The store was on the corner of

Vermont Avenue and 15th Street. They served breakfast, they had a fountain; in the window a large sign said, "Orange juice, two eggs any style, toast, coffee, ten cents," and underneath in small letters it said, "in silver coin."

Swent: [laughs] They knew.

Strauss: They knew. So that was the effect of the Hunts.

What the Hunts didn't realize, what I could observe as I sold my coins each week, that pushing the price up had the classic effect--it always does--it encouraged supply and it reduced demand. It encouraged supply, I particularly remember one little mousy sort of Irish woman that was standing in front of me. She went to the counter, she had three or four silver spoons in hand. She said, "Will you buy these?"

He said, "Of course." He saw the sterling mark, he weighed them, he paid her for the spoons. She was probably somebody's cook and had stolen three pieces of sterling ware.

And what she was doing on a small scale was being done on a major scale throughout the country by professional thieves.

Swent: You heard stories of people stealing and melting silver--

Strauss: Yes, they ran around in vans and had pizza ovens in them in which they melted down the sterling silverware as they stole it, because they didn't want the marks on it. And of course, the insurance rates on sterling silverware skyrocketed, and people began to say to themselves, "Why do I keep this stuff around here? It costs too much, the insurance is too high." They either put it in their safe deposit boxes or they sold it to be melted.

Swent: And brides turned to stainless steel instead.

Strauss: Exactly. As I think I say in my book, the consumption of silver for sterling ware in the United States the year before--I forget whether it was '78 or '79--but it was something like 27 million ounces. It's currently at about 5 million ounces. That's a market that was actually killed by what speculation in silver did.

So consumption was cut drastically. The only ones who didn't cut were the Eastman Kodak people. They tried to economize as much as they could. They raised their prices for their film so they got the money back, and when the price of

silver subsequently dropped, I don't think their prices dropped quite as much as the price of silver.

But supply rose dramatically from secondary sources, consumption was cut, and the stage was set for the subsequent problems that we've had with silver, which have been compounded in the last few years because so many of the new gold mines have very substantial silver byproduct. There's a mine that Echo Bay has in Nevada called the McCoy Cove mine that's producing 10 million ounces of silver a year. And Placer Dome has a mine in Chile called Coipa which is turning out 12 to 15 million ounces. It's primarily a gold mine, but they have all this silver along with it.

So silver production has risen sharply as a result of the increase in gold production, offsetting whatever loss there's been in silver production from straight silver mines. Consumption was badly affected. It's beginning to come back now, and I think the prices of silver are quite likely to show fairly good strength over the next few years. Not, I hope, ever to go back to forty or fifty dollars an ounce.

Swent: Or gold to $800.

Strauss: Well, gold is more likely to recover to $800 than silver to forty or fifty an ounce.

Swent: Is that a good place to stop?

Strauss: Yes, I think so.

OPEC, CIPEC, and Why Commodity Cartels Don't Work

[Interview 4: August 26, 1994] ##

Swent: When we stopped yesterday, you had talked about aluminum becoming more like copper in its marketing, and then there was some discussion of gold. Perhaps you'd like to talk more about these metals and the attempts that were made to control the prices and so on.

Strauss: Yes. The energy crisis was really the result first of the decision by the Arab oil exporting countries to embargo exports to countries that they thought were favoring Israel. This happened in late 1973. Then, in February of 1974, OPEC, that is,

the Organization of Petroleum Exporting Countries, startled the world by announcing a major increase in the price of oil. I forget the exact amount, but overnight the price was doubled or tripled.

At the time, there was a widespread belief that the world was going to run out of oil supplies in a matter of fifteen or twenty years. Many people spoke of the fact that after the year 2000, oil might become an obsolete commodity.

Swent: We were going to be in darkness.

Strauss: We would be in darkness. There was also at that time in circulation a study by a group of economists that called themselves the Club of Rome who put out a book called *Limits to Growth*, in which they argued that expansion of the world's economy was proceeding at such a rate that exhaustion of nonrenewable mineral resources, not just oil but many others, was a real possibility, and that even if not exhausted, supplies would become so scarce and so expensive that economic growth would be greatly hampered.

So this was the climate in the mid-seventies, and it gave rise to a belief on the part of many of the mineral exporting, developing countries, that all they had to do was to alter the terms of trade, to stop the practice of making raw materials available at low prices to the developed, consuming countries, and instead to reap the benefits of their ownership of precious resources. Actually, in 1967, the copper exporting countries had organized themselves under the acronym of CIPEC, and endeavored to stabilize the price of copper with little or no success.

This organization was dominated by Chile, Peru, Zambia, and Zaire, but in time, some other countries joined with them--Indonesia, and even Australia expressed some interest in becoming an allied nation to CIPEC.

The success of OPEC emboldened the thought that perhaps CIPEC could become equally potent, and indeed in June of 1975, I was asked to contribute an article to the magazine *Business Week*, published by my old employers, McGraw-Hill, on this broad subject, and the article appeared under the heading, "Why Commodity Cartels Won't Work."[1] I was in the minority at the time. There really was an atmosphere that commodity cartels would take over.

In sessions of the United Nations, repeated speeches were made on the floor of the United Nations about the fact that the commodity exporting countries were going to get together to

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[1]See Appendix F.

effect the change in the terms of trade that I have referred to. And a committee was formed by the United Nations to consider the establishment of what was called a common fund. This common fund would be used to finance commodity agreements covering a host of commodities, most of them agricultural, but including manganese, bauxite, copper, and tin among the minerals, which would buy surplus supplies in times of surplus and feed out from the accumulated stocks to meet the times of shortage.

The idea was examined at length over a period of several years. The amounts of money to effectively finance the accumulation of such inventories would obviously be very great, and the financing of it was the rock on which the idea foundered. But it was very prevalent through the decade of the seventies, and I was concerned about it, because it seemed to me that the developing countries simply did not understand the nature of the market operations.

Swent: This would be a mega-stockpile.

Strauss: It would be a mega-stockpile on an international basis, presumably with the backing of the United Nations. And the majority of the commodities to be covered were not going to be minerals, but agricultural commodities like wheat, cocoa, coffee, cotton, the stockpiling of which presents many physical problems that don't occur with respect to minerals.

Author of *Trouble in the Third Kingdom*

Strauss: My preoccupation with the lack of sophistication on the part particularly of government officials in the developing countries became so great that I first conceived of the idea of writing a book on this subject. It took me a long time to get the book written, but it was finally published in 1986 under the heading of *Trouble in the Third Kingdom* [Mining Journal Books Limited, London]. The purpose of the book was really to explain in layman's terms how commodity markets, and in particular how mineral markets really work, and why efforts to stabilize or control prices, however well meant the intentions are for undertaking this, were unlikely to be successful in the long run.

As part of this preoccupation of mine with the need for educating people, I also conceived of the thought of volunteering to give courses of lectures on the broad subject of the economics of the mineral market at the mining schools. I knew the mining schools were doing an excellent job of educating students on how

to sink shafts, how to crush rock, how to recover metals from the ores, how to find mineral deposits. But I had a feeling that at most mining schools, there was not too much attention paid to the realities of the marketplace which the mineral industries were serving.

I discussed this issue with a friend of mine who was a professor of nuclear engineering at Massachusetts Institute of Technology. I had known him well over many years.

Swent: Do you want to name him?

Strauss: His name was Manson Benedict, and he was the brother of a young man who had worked with me at the *Engineering and Mining Journal*, William Benedict, that had simply taken a summer job with McGraw-Hill. I had subsequently visited them at their home in the upper peninsula of Michigan, where their father, C. H. Benedict, was the distinguished director of metallurgy for the Calumet and Hecla Consolidated Copper Company.

So Manson had a background in minerals, and he arranged for me to come to Cambridge and meet with a group of his colleagues in the Materials Engineering Department of MIT. The mining school as such no longer existed.

Lecturer on Mineral Economics at MIT and Elsewhere

Strauss: The outcome was that I agreed to give a series of twelve lectures as a visiting lecturer at MIT. The first year that I did this was 1977, and I subsequently gave the course at MIT on five different occasions.

Word about these lectures spread, apparently, in the mining school circles, so in due course, I gave similar lectures at the Krumb School of Mines at Columbia, at Penn State, at the University of Arizona, and at the Polytechnic University in New York, and a concentrated week of lectures at the Colorado School of Mines. The last time that I conducted such a course was at Berkeley at the University of California in 1986.

Giving these lectures helped sharpen my thoughts about my projected book, and in fact, the book subsequently has been used as a textbook in mineral economics courses at some of the schools mentioned.

A further aspect of my attempt to bring reality to the discussion of stabilizing and/or controlling mineral prices was a number of lectures given at industry meetings. For example, in 1978 I was invited first to Hong Kong to address the Commonwealth Mining and Metallurgical Congress. This was an event that happened once every five years and included delegates from all of the principal countries involved in mining within the British Commonwealth.[1]

Swent: That must have been a tremendous honor, to be invited to speak to them.

Strauss: Yes. And then a few weeks later, I went to Canberra in Australia to present a paper before a joint session of the Australian Institution of Mining and Metallurgy and the American Institute of Mining and Metallurgy. Incidentally, Jim Boyd was among the other Americans present at that session at Canberra.

In time, of course, not due to my efforts but due to the realities of the marketplace, there was recognition that efforts to control mineral prices to reach international commodity agreements were not as simple as most laymen and politicians believed. One of the factors that made any effort to reach commodity agreements particularly difficult at that time was the wide fluctuation in the values of the individual currencies. Prior to 1971, when the Bretton Woods Agreement was in full force and effect, the principal currencies of the large industrial countries remained in more or less fixed relationship with each other, with only occasional changes.

But after 1971, the rate of exchange between the dollar and the pound, between the yen and the mark, between the franc and the dollar, changed so dramatically and so frequently that it was clear that any effort to stabilize international commodity prices faced one major handicap: in what currency should the price, the stabilized price, be stated?

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[1]See Appendix I.

The Example of the International Tin Agreement[1]

Strauss: This difficulty was already faced by the International Tin Agreement. When it had started, the prices within which the price of tin was to be stabilized, that is, a floor price and a ceiling price, had been stated in terms of pounds sterling per metric ton. But with the changes in the value of the pound, the tin miners decided that they needed another benchmark. There was talk of using the dollar, but for a long time, the problem was that the United States was not even a member of the International Tin Agreement.

Finally, the agreement was based on the value of the Malayan currency, sometimes called the Malay dollar but more frequently the ringgit, and it was measured in ringgits per picul. This is a unit of weight known only to Malayans, I believe.

Swent: But that's where most of the tin was.

Strauss: At the time, Malaya was the principal producer of tin, and a picul, I found out, was the number of pounds of tin ore that the coolies engaged in washing the tin from the placer deposits in Malaya could carry on their shoulders, something like 140 pounds. So to have an international commodity price for a major commodity like tin expressed in terms of ringgits per picul did not make for easy understanding on the part of the man in the street.

Swent: No. [laughter]

Strauss: So currency problems were--

Swent: But the tin agreement was still in effect in those days?

Strauss: It was still in effect. The tin agreement had been negotiated over a period of years, first came into effect I believe in the year 1956 for a five-year term. The second agreement was carried on, and so on. The last of the tin agreements was the one for the sixth agreement, and it collapsed in 1985 as the result of inability to finance the growing burden of stocks needed to shore the price of tin up to a level which was satisfactory to the producers.

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[1]For more on this subject, see Norman Cleaveland, Dredge Mining for Gold, Malaysian Tin, Diamonds, 1921-1966; Exposing the 1883 Murder of William Raymond Morley, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1995.

This again brings up the point that I made before, that when political considerations enter into the determination of prices, markets become unreal.[1]

Swent: The United States had finally come in on this--

Strauss: The United States was a member of the fifth agreement, but did not participate in the negotiation of the sixth agreement. It was only a member for the term of the fifth agreement. The price of tin had been pegged at a level which would satisfy the high cost producers, notably Bolivia, as a minimum, but it was higher than was justified by the market. It tended to discourage consumption on the one hand, and above all, it tended to encourage production. Two producing countries, Brazil and China, were not members of the tin agreement, were not bound by the restrictions on production in times of surplus of supply that applied to the member countries, such as Malaya, Bolivia, Indonesia, and therefore, Brazil and China took advantage of the high level at which the price was being held to greatly increase their production.

And in the long run, this created the surpluses. The effort to finance those surpluses led the manager of the tin buffer stocks to borrow money in order to buy more stocks, putting up the tin for security, and eventually the value of the collateral simply wasn't enough to permit further borrowing. When the banks and the brokerage houses that carried on the transactions were not willing to undertake any more transactions, the whole thing came crashing to the ground.

Incidentally, for anybody that's interested, there is a very good book describing what happened when the tin agreement collapsed. It is *The Tin Men: A Chronicle of Crisis* by Ralph Kestenbaum, published by the Metal Bulletin in 1991. I read and reviewed this book for a United Nations publication. It's very convincing as to the difficulties.

Who took the staggering losses that were involved? The governments that subscribed to the tin agreement, including the consuming countries such as the United Kingdom and Germany, tried to distance themselves from any responsibility for loans that had been made to the tin buffer stock. But in the long run, the courts actually worked out a settlement so that the collapse of the agreement did not have to be shouldered entirely by the persons who had made the loans.

Swent: But in the meanwhile, people had been thinking that these agreements like CIPEC and others, would work.

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[1]See Appendix K.

Strauss: That's right. And while the price of tin has fluctuated since, it has never re-attained the levels that they were trying to maintain in the heart of the period of slack business such as we had in the mid-eighties.

So here was the one case where a commodity agreement was worked out on a mineral--tin--and where in fact it managed to struggle through for almost thirty years, with a lot of good will and a lot of good intentions, but because decisions as to the proper price support levels were based more on political grounds, of compassion for the high cost Bolivian mines, et cetera, in the long run, it didn't work. I am therefore very skeptical about any kind of commodity agreements working in the long run, because whether run by governments or run by corporations, the motives eventually lose sight of the realities of the market.

Swent: How long did CIPEC last?

Strauss: CIPEC is still, I believe, nominally in existence, but it has never really been effective, and never actually succeeded, for example, in getting agreement on cutbacks in production when there was a period of surplus supply. It did accomplish some things. It brought a lot of Zambians, Zaireans, Chileans, and Peruvians to Paris and London for meetings. I think a lot of people were educated by it, but it never accomplished the motive, for the reason that copper is very different from oil, as I've mentioned earlier. One of the things that CIPEC could not change is that, thanks to the durable and recyclable nature of copper, scrap supplies are always going to have a major influence on the price of copper, and controlling the supplies of primary copper won't necessarily succeed in controlling the market.

It was an understandable effort on the part of the developing countries to control the price, but today, I think everyone in the copper business recognizes that copper prices cannot really be managed. Every effort to do so has in the long run collapsed. The market will operate best if the producers bear in mind that demand for their product is going to fluctuate considerably, and that therefore prices are likely to fluctuate. If they are prepared to go through the periods of slack times, almost inevitably, there will be periods when demand is good and prices will be firm, and the business will be remunerative.

As I said earlier, aluminum, nickel, and molybdenum are now facing up to the same factors, and copper's competitive position today is probably stronger than it's been in the entire post-World War II era, for the reason that the substitute materials are now being governed by the same market forces as govern the copper market. Consumption is good, and with the developing

world expanding its industrial production and its consumption at a high rate, I think the outlook for copper is quite good. But the fears that the world is going to run out of copper have been proven groundless. The number of new copper deposits being identified all over the world, but particularly in Latin America, is such that it is clear that there will be abundant supplies of copper for many years to come.

XVIII MINING AND ENVIRONMENTALISM

Diminishing Markets for Lead

Swent: Another big development that happened in the early seventies was the real flowering of environmental consciousness, the environmental movement. That had a tremendous impact, too, on mining.

Strauss: Yes, it did. At American Smelting and Refining Company, or Asarco as it was called by the seventies, it was particularly severe, because Asarco was a major producer of several commodities that were singled out for their potential threat to health. I am thinking specifically of asbestos, which we've already discussed in a limited way; lead; cadmium--all of which were significant products for Asarco. I think I mentioned earlier that the Lead Industries Association had been aware of the problems of lead toxicity and monitored such issues as blood levels in young children, and had taken steps to--

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Strauss: And had taken steps to ensure that its members were aware of the risks.

Swent: The issue of lead in gasoline was--

Strauss: That was a new issue. In fact, the lead industry had prided itself on the fact that the tetraethyl lead had enabled a reduction in the costs of refining petroleum into gasoline, and in fact, resulted in a substantially greater recovery of gasoline from the crude materials being refined than was possible without the addition of tetraethyl lead. It had been the most rapidly growing market for lead during the immediate postwar period, as automobile engines became more sophisticated and required gasoline with higher octane ratings.

So the loss of that market was a major blow for the lead industry. At first, the restriction was on the amount of lead that could be added, but eventually many countries adopted regulations requiring automobile manufacturers to produce vehicles that would operate only on lead-free gasoline. A market which had been absorbing several hundred thousand tons of lead a year gradually evaporated. Today, the amount of lead going into gasoline refining is very small indeed.

Similar restrictions applied to lead in paints, to lead in solder. The influence of lead-containing solders on water supplies has been emphasized in the last few years, and measures have been taken to either restrict or abolish the use of lead-bearing solders for plumbing. A sharp contrast with the days of the Roman Empire, when in fact the pipes that the Romans used were made of lead.

Indeed, in the early part of this century, lead pipes were in fairly broad use in the United Kingdom, and perhaps other parts of Europe. They were never really used in the United States to any great extent. But lead solders were used to join galvanized or copper and brass pipes in connection with water supply. So even though the amount of lead was much smaller, nevertheless there was some lead present in the water supply system, and the allegation is that this gradually dissolves and affects the health of people.

Swent: Lead in pewter was a problem, supposedly, too, wasn't it?

Strauss: Yes, but pewter never represented a large market.

The consequence of all this is that the lead market now is enormously dependent on a single application, which is the storage battery used for the lighting and ignition systems of automotive vehicles. Lead batteries are used for other purposes also, but this is the predominant use. Lead for batteries now represents perhaps 70 to 80 percent of the total consumption of lead in the United States. It's somewhat lower in other countries.

Lead is used, however, interestingly enough, in other ways in which it is a protection of health rather than a menace to health. For example, lead is used as a protective measure in x-ray operation.

Swent: For shielding.

Strauss: And for shielding against nuclear radiation in atomic energy installations. One of the many uses of lead that has been either

prohibited or restricted is use of lead for shot for people who hunt, the theory being that the lead pellets are either swallowed by wild fowl or act as a poison in streams, when they fall into the bottoms of lakes or brooks.

One other material that Asarco produced, was the chief producer in the United States, actually, was arsenic, and I failed to enumerate that.

Arsenic Fears and the Closing of the Tacoma Smelter

Swent: Right, we haven't mentioned that at all. Please tell about it.

Strauss: The arsenic content of the copper ores treated at most copper smelters in the United States creates something of a problem for all of them, but at none was the problem more severe than at Asarco's Tacoma smelter, because the Tacoma plant for years handled copper concentrates from the Philippines with a very high arsenic content, as well as copper concentrates from Peru running high in arsenic. There were extended hearings during the seventies in connection with the health of people in the Puget Sound area because of the operation of the Tacoma smelter. In fact, this was one of the factors that in the long run led to the closing down of the Tacoma operation, which had been there since the very inception of the company.

Swent: Was the problem air pollution, or water, or both?

Strauss: Well, both, and also the alleged threat to the health of the Tacoma workers, although in fact the records did not sustain the thought that there was a higher rate of lung cancer or other diseases that might be attributable to the presence of arsenic among the workers at Tacoma. The Columbia Broadcasting System did produce a television show about industrial threats to workers' health that included a segment dealing with the Tacoma plant, and part of the show included an interview with one of the Tacoma workers who was in the hospital suffering from lung cancer, from which he eventually died.

Omitted from this discussion was the fact that this particular worker did not operate in the section of the plant that handled arsenic, and secondly that he had a record of smoking an average of four packs of cigarettes a day. There was no reference to either of those facts in the telecast, and Asarco management made vigorous representations to CBS News about the fact that this was not brought out in the course of the

presentation. We never got any satisfaction from CBS on this issue. They simply ignored our representations.

Swent: CBS has been particularly bad in that respect--particularly biased, I should say.

Strauss: That's right. They tend to be very one-sided in many of their presentations of these issues. So that caused a lot of concern at the time.

Treating Sulfur Emissions and Using Sulfuric Acid in Solvent Extraction

Swent: And higher costs--

Strauss: Yes. The costs of dealing with the broad environmental issue, particularly, of course, the cost of dealing with the sulfur emissions from smelters, was very high. It was necessary, as a result of regulations by the EPA and other government agencies, to install facilities to recover much more of the sulfur than had been the case previously. The Hayden [Arizona] plant, the largest of the company's copper smelters, was one of the first to be retrofitted, and recovery of sulphur improved significantly as a consequence of putting this in.

But once the sulfur has been recovered in the form of sulfuric acid, there then ensued the problem of what to do with the acid. Much of the acid had to be shipped to consumers located at geographically remote areas at high cost, and resulted in substantial losses per ton of acid sold. This, in turn, of course increased the costs of operating the facility.

Broadly speaking, while every effort was made by the company to meet the environmental requirements of the government, the capital invested in improving added nothing to the effective capacity of the plants. In other words, there was no additional revenue stream resulting from the environmental expenditures. The American nonferrous metals industry as a whole, and Asarco in particular, felt that we were being placed at an increasing disadvantage to producers located in countries that did not have similar environmental standards. I think today, there is beginning to be a movement in countries such as Chile, Mexico, Peru, to impose environmental standards, but they lag far behind the United States, and therefore the capital required and the operating costs involved are much lower in the developing countries than they are in the developed countries.

There have been offsets, perhaps partly due to the prevalence of the abundant supplies of sulfuric acid at locations in the West, and partly due to technological advance and recognition of a new method of producing copper. An increasing share of the domestic production of copper is coming from lowgrade oxide copper ores that can be treated by the solvent extraction electro-winning process.

This process requires the use of sulfuric acid in the leaching out of the copper from the rock, and it has become a very substantial market. So that gradually, an adjustment has been made there. This is currently in the United States the lowest cost of the U.S. copper production, as compared with the copper being produced by the traditional milling, flotation, smelting, and electrolytic refining process. Costs are fifteen, twenty, or up to twenty-five cents a pound lower with SX-EW.

Swent: And you can use the sulfuric acid that you're producing from your smelter in the SX-EW.

Strauss: Yes. Right now, the largest single copper-producing mine in the country is the Morenci mine of Phelps Dodge, and based on the most recent announcement they've made of a further increase in their SX-EW capacity, more than half of the production of that mine will be from SX-EW, whereas twenty years ago, it was all the result of conventional milling and concentration and smelting.

So it is a spin-off, perhaps accelerated somewhat by the environmental concerns, although the first application of the SX-EW process was really by a very small company called Ranchers Exploration that operated in New Mexico and Arizona. Ranchers Exploration was in the business before the environmental movement had really started.

Swent: We're just completing the oral history of Wayne Hazen, who developed the solvent extraction process for Ranchers.[1]

Strauss: Right, together with Mr. Maxie Anderson.

Swent: Yes. And that's where they developed this.

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[1]Wayne Hazen, *Plutonium Technology Applied to Mineral Processing; Solvent Extraction; Building Hazen Research; 1940 to 1993*, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1995.

Strauss: Incidentally, interestingly enough, I believe I'm right that Maxie Anderson is now in the National Mining Hall of Fame as a result of his participation in the SX-EW process.

Swent: Oh, really? He met a tragic end in a ballooning accident in Germany.

Strauss: Yes. But probably, given his choice of methods of dying, that probably would have been his top choice, because he was a terrific enthusiast, and in fact was the first person to have flown across the Atlantic in a hot air balloon.

Swent: He was a real adventurer, wasn't he?

Strauss: With two partners, I might add. But he was a real adventurer; he was a real character.

Cost of Restoring Old Mine Sites

Strauss: In addition to the application of the environmental restrictions to the processing of minerals, of course, there are now a lot of measures being taken with respect to the mining. There are a lot of requirements being placed, sometimes as a result of measures adopted by the federal government, and a lot of them on the part of individual states, about restoration of mining sites, particularly open pit mining sites. There are increasingly stringent concerns about abandoned mining sites. The Superfund problems of treating industrial wastes have included many areas where there are predominantly slag or waste materials from old mining operations, and companies are being asked to contribute to the costs of treatment of these sites.

Asarco within the last two or three years, I believe, has had a severe cost imposed on it in regard to the operations it had at Leadville in Colorado and also in the Denver metropolitan area at its Globe cadmium plant. These are not negligible settlements; they have run into the eight-figure category.

Swent: And those go back long years, don't they?

Strauss: Yes, that's right. As in the case of Tacoma, the Globe plant I think was one of the original operations that was taken in to form the American Smelting and Refining Company in the 1890s. Environmental concerns also, of course, greatly affected the asbestos operation in Canada, as previously discussed, and Asarco eventually pulled out of that operation entirely, although it had

been a profitable and worthwhile enterprise while the investment was held.

XIX VICE CHAIRMAN OF THE ASARCO BOARD AND CONSULTANT TO OTHERS, 1979 TO THE PRESENT

Making Policy in Troubled Times

Swent: By now, you were a director and then you were vice chairman of the board.

Strauss: Yes. That occurred during the seventies.

Swent: This must have changed your job.

Strauss: Yes. My normal retirement date would have fallen on my sixty-fifth birthday, which was in 1976. So I would normally have retired as an employee at the annual meeting in 1977. However, Mr. Barber asked me to stay on, and I was continued as an employee for two additional years, and finally retired as an employee in April of 1979, the annual meeting of April 1979, I stepped down as an employee. I was made--my status as an employee changed from being executive vice president in charge of sales in 1975, and at that time I was elected vice chairman of the company. The day-to-day marketing responsibilities were then transferred from me to James Buck, who had been manager of sales under my overall direction. My new responsibilities as vice chairman--

Swent: This was a big change, I presume.

Strauss: Well, not all that great, really, but it was a change. Mr. Barber felt that I should be helpful in regard to broad policy matters in the company for another three years, rather than continue my direct responsibilities for the marketing end. More of my time was spent frankly in Washington because of such things as the growing concern about the environment and growing concern about the general economic situation.

There had been three or four really rather poor years, 1975 through '77. In '78, there was a mild improvement beginning, but it was still a difficult environment for the company. In 1979, there was a very brief period of improvement in the market, and it was at that very time that the Hunt speculation in gold and silver was occurring. It seemed to pull up interest in other commodities, particularly copper. So the price of copper rose during '79 to a level that was once again remunerative to the domestic copper producers, including Asarco. We had good years in 1979 and even in 1980, in spite of the collapse of the speculative boom in the precious metals which occurred in March of 1980, as I remember it. But copper had a fairly good year in 1980.

So I was in a sort of elder statesman capacity for the company at the time. I'm trying to recall specific examples, and they don't come to mind at the moment, of things that happened. I had spent February and most of March actually of '79 in Tucson, where I was giving a series of lectures for the university, and I repeated that again in 1980. You may recall, I gave the example of my ten-dollar suit.

Swent: Right. Arizona was just devastated. Particularly I think of Arizona as being just devastated by the environmental restrictions.

Strauss: Right. Well, of course, it forced the closing of many of the copper smelters in the state. The Hayden and San Manuel smelters, and to a limited extent the Inspiration smelter, were the only ones that operated continuously. The Morenci smelter was a sort of an off-and-on proposition. The smelters at Douglas were closed down, and also, I believe, Ajo. So it was a difficult period in Arizona on the processing. The mining continued because that was when mines started exporting some of their concentrates to Japan, because of the lack of market.

Swent: It was not a booming business at that point.

Strauss: No, it was not. What else can I tell you about?

Well, even though I retired as vice chairman in March of '79, I was asked to remain on the board, and an arrangement was made under which I was retained as a consultant to the company.

Swent: You actually stayed on until 1989, didn't you?

Strauss: 1981, as a director. I remained as a consultant until 1988 or 1989. So it was a transition period. But during this period, after I stepped down as vice chairman, I was free to accept

consulting arrangements with other companies provided they were not in conflict with anything that Asarco was doing, and of course, I was careful not to at any time disclose any confidential information that came to me as a result of being a director of Asarco.

Advisor to Broken Hill on the Ok Tedi Mine

Strauss: One of the arrangements that began early, in 1980 as a matter of fact, was advising Broken Hill Proprietary with respect to possible marketing strategies should they proceed with the development of the Ok Tedi copper deposit in Papua New Guinea. That arrangement with Broken Hill actually continued in effect until 1987, after Ok Tedi was in full production. I did not make any marketing arrangements for them; I simply suggested strategies for them, who to approach, where to go, and I kept them advised on a periodic basis with respect to my views of what was happening in the copper market.

Swent: How did this connection with Broken Hill come about?

Strauss: I got a telephone call one day from their representative who had his office in New York. He asked if he could come to see me, and I said I'd be glad to.

Swent: Who was it?

Strauss: I've forgotten his name now.

Swent: It wasn't an old friend.

Strauss: No, no. He was somebody who'd heard me give a speech about the metal markets at some point. He said Broken Hill Proprietary was one of several partners in the Ok Tedi venture. One of the other partners was Metallgesellschaft, the German company. He said, "We know that they know a lot about the metal markets, but we feel we need to have other sources than our partner, because we want to get various views on it, and we believe that you can be of assistance to us."

I said, "Fine," and there was actually a meeting in San Francisco in early 1980. The other major partner in the enterprise was Amoco, or the old Standard Oil of Indiana Company. Amoco was by that time already somewhat interested in copper, because they had taken over Cyprus Minerals and had the Pima mine in Arizona, among other things, as--

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Swent: This whole development in the South Pacific was a new thing at that point.

Strauss: Yes. Actually, the Ok Tedi deposit was originally found by Kennecott, but Kennecott and the Papua New Guinea government couldn't come to agreement on the basis on which Kennecott might go forward with the development, so Kennecott dropped out. Then Broken Hill Proprietary, which was an Australian steel company that was beginning to look into the nonferrous industry, and Amoco formed a joint venture to take it over, invited the Germans to join them. By the time the project was ready to go into production, the government of Papua New Guinea had a 20 percent interest. Amoco and BHP each had 30 percent, and a German consortium including not only Metallgesellschaft but Degussa and the German government itself had the other 20 percent.

It was a difficult undertaking in remote and wild country in the western part of Papua New Guinea with great logistic problems. But the thing that eventually decided them to proceed with this project was the fact that overlying the copper deposit was a deposit of fairly good grade gold ore. In order to strip the copper orebody, the gold ore had to be removed anyway, and it lent itself to easy processing. And for the first four years of operation, from '83 to '87, they were a gold producer, and then went into copper production.

Swent: So when you advise a company like this, what sort of thing do you do?

Strauss: We talked about first of all, is it desirable to build your own processing facilities, meaning smelting or refining, or should you limit yourself to the production of concentrates? The pros and cons of that. Secondly, if you are a concentrate seller, where do you sell? To whom should you talk? How long should the terms of the initial smelting contract be for? Should you sell everything you expect to produce, or should you sell only part of what you expect to produce to guard against unexpected delays or difficulties, or in order to retain freedom of action with regard to some of your production. What are the political risks involved in tying up with smelters in various countries?

Located as it was in Papua New Guinea, if they decided to sell, the closest market obviously would be Japan. Was it wise to sell everything in Japan? Were there advantages in shipping concentrates to Europe or to the United States or to Canada? These are some of the broader issues on which they wanted advice.

Also, once you were reasonably close to production, should you hedge by selling forward on the commodity exchanges? What should be done?

Swent: Do you recall what advice you gave them, and whether they followed it?

Strauss: Well, they followed it, but I will not try to be too specific about the advice. [laughs] But principally, they did want to be--and I made a major study for them about every second year of what had happened in the copper market, what seemed likely to be happening in the copper market, the kind of thing that's done by Brook Hunt and Company, by Commodities Research Unit, and by other analysts of the metal markets. But they wanted an individual report from somebody who wasn't distributing the report to a wide number of people.

So it was a very pleasant relationship, and it was capped off finally with a trip that Janet and I made to Papua New Guinea in 1987, just as production was being started, and they were very gracious hosts. I still have very good relationships with the organization. The gentleman who eventually took over the U.S. representation is a gentleman named Everett Horgan, who was an American who had been in Australia during the war, was a lawyer, and married an Australian lady, and had lived for some years in Melbourne, but he was shipped back to the United States to run the New York office. He has since retired from his association with BHP, but he and his wife are very good friends of ours, and they were here in this cottage two weeks before you were. [laughs]

Swent: Oh, really?

Strauss: Yes. So Asarco was extremely kind to me. They provided me with an office during the period that I remained as a director, and I had the services of my secretary available to me for those two years. But then when I stepped down from the board, I felt that I should no longer be going to the Asarco office. Partially, this was to suit my own convenience. The Asarco office was in downtown New York; I lived in Westchester. I commuted by train to Grand Central. I then had to take the subway or a taxi or walk, which I did on occasion when there were subway strikes, all the way down to the bottom of the city.

An Office with Behre-Dolbear and Company

Strauss: So I looked around for a possible arrangement in Midtown, close to Grand Central. I finally wound up making my office for two or three years with Behre-Dolbear and Company, a well known consulting mining firm. They had an office at Park Avenue and 45th Street, which was an extremely convenient location. I was not actually an employee of Behre-Dolbear or an associate, but I made my office with them, and in exchange for their making the office available to me and some assistance from their office staff, I gave them a certain amount of my time when there were economic issues involved in some of the reports they were making. I suspect you're familiar with them; they're a very well-known firm of mining engineering consultants.

Swent: Yes.

Strauss: They were extremely busy at that time with a lot of the new gold projects that were underway.

That was also a very happy association. Mr. Hans Schrieber, who was the head of Behre-Dolbear--was then and still is--and I got along famously. So I continued commuting to and from New York for a period of time.

But eventually, when I decided to seriously buckle down to the job of writing my book, I decided I didn't want to commute to New York, that I could write the book better if I was at home and not disturbed by people dropping in at unexpected times to ask questions. So eventually, I gave up the arrangement with Behre-Dolbear, although I've done some work with them on occasion, when they have specific--. So since then, my business address is the same as the place where I sleep.

Swent: And you wrote your book at home?

Strauss: I wrote my book at home. I had looked around with various organizations that I thought might be interested, and I finally made a very happy choice of Mining Journal Books. Michael West, who was the senior director of *Mining Journal*, was an old friend. I met him frequently when he came over to meetings of the American Mining Congress. He used to call on me in New York, and in fact, at times I wrote the silver chapter for their annual mining review. So we were good friends, and he expressed interest in the book. He was an extremely helpful editor, made a lot of valuable comments, and I think helped improve the quality of the book considerably.

Speaking to International Conferences

Swent: It's a very fine book.

Strauss: Yes. Writing the book was sort of fun. But even though I was in New Rochelle and no longer in New York, I was still being asked from time to time to give talks to various groups. One of the happier occasions was when the International Wrought Copper Council--IWCC--met. It's a group of European fabricators--I shouldn't say European, because the Japanese are members--non-U.S. copper fabricators that's been in existence for a long time. They have annual meetings at which the outlook for copper is discussed.

While I was at Asarco and an Asarco employee, the general counsel of Asarco warned against any attendance by Asarco employees at meetings of the IWCC, because it was believed that there was a lot of price discussion there which it would be unwise for us to participate in, and we might hear things that we shouldn't hear, a hint that it might be a cartel, et cetera. So I never did participate, and in fact, none of the American copper companies participated, with the exception of American Metal. Because of its investment in northern Rhodesian copper, Zambian copper later on, they felt free to, and apparently their counsel was less disturbed about their attending. So some of their people did attend, and I believe once or twice, Anaconda sent a representative because of Chilean copper. I'm not sure of that. Eventually, of course, after the Chilean properties were taken away from Anaconda and Kennecott, the Chileans became very active participants in the meetings of the IWCC.

The IWCC used to arrange for producers to attend. Producers had no vote in the proceedings. Canadian companies like Noranda would regularly attend. The German Norddeutsche Afinerie would participate. And these were extremely interesting sessions held in different places.

Well, in 1984, the meeting was held in Hamburg, and it was a time when the U.S. copper industry had appealed to the International Trade Commission for restrictions on imports of copper. The price was very low. The Chileans had just expanded their production, and it was felt that there should be some kind of restriction, the kind that the steel industries have invoked in the past, and the automobile industries have invoked, limiting the number of Japanese cars. And there was talk of similar copper restrictions.

So Keith Hendrick of Noranda called me up and said that the IWCC had asked him to try and find somebody from the United States who could try to discuss not the U.S. point of view on these political issues, but the outlook for production and consumption of copper in the United States, and Keith thought of me. So I called Asarco and I said, "I am still your consultant but I'm not your employee any longer." I spoke to the general counsel. I said, "Do you see any objection to my going as an individual member? I'm not in a position to conspire with anybody on the price of copper, and I really would like to go and give this talk."

After hemming and hawing a little bit, the Asarco general counsel said, "Well, use your own judgment. If you really want to go, use your own judgment." So I went and gave a talk.

And the American Mining Congress asked me to give a speech at their meeting in Phoenix for the financial officers in 1983. I spoke to the Battery Council, which represents lead, on lead issues at Las Vegas.

Swent: Would you use some of the same material for different speeches, or some of the same research?

Strauss: No, each speech was tailored to the audience. Janet and I had a very enjoyable trip to Alaska, and that was in September of '83 at the invitation of a group which is called the Commonwealth Club of the North, just to talk about broad issues in the minerals industry, particularly with respect to relationship to the communist countries, because of their proximity to Russia or Siberia. So we went up, we spent a week based in Anchorage as guests of the club. I gave my speech, but we also made trips to Prudhoe Bay, to Nome, to Fairbanks, and we had a great time in Alaska.

Swent: Prudhoe is exciting, isn't it?

Strauss: Yes, very much so.

Serving as an Expert Witness

Strauss: So my time was well occupied. I had various clients. I was used as an expert witness in a number of legal proceedings. I was a witness for the AT&T system in an antitrust suit brought against them because they had built a copper refinery in South Carolina to handle their own scrap. This was something that went on in

St. Louis. A scrap dealer had brought this antitrust action against them on the grounds that their deciding to build a copper refinery had hurt his business.

I was a witness at a proceeding in Colorado, a question about participation by CoCa Mines in profits made by Occidental Minerals, a subsidiary of Occidental Petroleum, in trading silver on the commodity exchange during the Hunt episode. This suit was brought sometime later. CoCa Mines is now part of Hecla, but it was then an independent company.

They had the underlying lease on the Candelaria silver mine which Occidental had arranged to bring into production, and Occidental decided when the prices of silver were high, a very astute decision, to hedge by selling silver forward at extremely high prices against production that they hadn't even begun yet. CoCa felt that they were entitled to part of that, and it was all based on correspondence. The arbitrators needed to hear something about how the commodity exchange works, so CoCa engaged me as a witness to discuss that.

And there were similar examples; I won't try to enumerate them all. So that my background of knowledge about the metal markets was valuable where there were issues.

Helping Senator Gore to Profit from Germanium Mined on His Land

Swent: Your knowledge was constantly being used.

Strauss: Yes. But the most significant one of those, from the standpoint of interest, was the proceeding by Senator Albert Gore, Sr., and his wife in which the Senator Albert Gore, Jr., not yet vice president, and his wife were also involved, although not active participants, against Jersey Miniere, the operator of zinc properties in Tennessee.

This all arose from the fact that, curiously enough, Occidental Minerals, a subsidiary of Occidental Petroleum, had done some drilling on farm lands owned by the Gore family in central Tennessee, had identified the existence of the zinc deposit, had written a lease arrangement to deal with those zinc ores, but had then decided not to go into the zinc business. With the consent of the Gores, the leases were transferred to Jersey Miniere, which had started out as a joint venture between Union Miniere, the Belgian company, and New Jersey Zinc.

But by the time this issue arose, New Jersey Zinc had backed out of the venture, and in fact, Union Miniere was the only owner of Jersey Miniere. Jersey Miniere was operating on leased lands in central Tennessee, extracting zinc ores. Although the leases dated back to the early eighties, it was not until 1987 that they began to extract ore from the Gore farm area. Before that, they had had minimum lease payments, the kind that are in vogue, that people pay an annual lease rental of so much until the property gets in production, and those payments apply against future actual royalties. When actual production begins, the royalties are calculated.

As Senator Gore, Sr., explained to me when he spoke to me on the telephone, he had been referred to me by Paul Baillie, the well-known geologist based in Denver, who had been the head of Occidental Minerals when the lease was originally made. Paul is no longer connected with Occidental, but he has an active practice in Colorado.

The senator had called Mr. Baillie to complain that he didn't think he was getting the appropriate royalty under the terms of the lease agreement. Mr. Baillie sympathized with him but said that this involved issues that he was not too familiar with, and suggested that he call me. Mr. Baillie knew me because I'd been on the other side in the proceedings in Colorado some years earlier. [laughs]

So the senator asked me if I had any conflict of interest, and I said I did not, and he then outlined to me what was the crux of his problem, which was that the zinc ores from central Tennessee are concentrated at the mine and then shipped to the smelter at Clarkesville, Tennessee, where zinc and cadmium is recovered. But a residue is produced high in germanium, and that residue is shipped to Belgium, where it is further processed by an affiliated company at the Hoboken smelting and refining operations.

According to Senator Gore, very few details were given to him with regard to how his royalty payments were calculated. When he pressed the issue, he discovered that no recognition was given to the value of the germanium, and that was really the issue.

Well, I won't go into all the details. Senator Gore was represented by a very able lawyer, but he took me on as an expert consultant, and I had meetings--first, of course, I read all the papers that the senator forwarded, and then I talked with various people. I went down to Nashville and met with the senator and

his lawyer, and it seemed to me that the senator had a very strong case.

The Jersey Miniere position was that zinc smelters did not pay for germanium, and therefore, that they were simply following trade practice in only paying for the zinc and cadmium. Well, the facts are that most zinc ores don't contain germanium, and that's why zinc smelters don't pay for them.

Swent: It's very rare.

Strauss: And furthermore, that even if the ores contained germanium, most zinc smelters don't have facilities by which germanium can be recovered. But the Belgians did have such facilities. So that was really the crux of the issue. Eventually, the lawyers for both sides agreed that there would be hearings in Nashville before a board of arbitrators, not taken into court. This accounts for the fact that the issue was not widely reported in the press or anything; it was privately heard before a three-man panel selected with the agreement of the participants by the American Arbitration Association. There were two from Alabama and one from Georgia, none from Tennessee. And they were very capable people. You could tell from their questions they knew how to proceed on this issue.

Swent: So did we win?

Strauss: We won. We won because we had no data whatever on the value of germanium other than the limited material published in the press, but based on that limited material I had made some assumptions, some calculations as to how much of the germanium was actually recovered. Obviously, it was present in such small amounts that much of it would be lost to processing. There would be costs of shipping the material and so on. But I made some assumptions as to what I thought perhaps the value of the germanium was, against which the 4 percent royalty would apply, worked back to the mill. The lease agreement was plain on that: it was the value at the mill, so you had to take all subsequent costs--processing, transportation, processing losses--into account.

So we had a big chart, and I had made all these assumptions. I was candid with the arbitrators. I said, "I can't say that these are the real figures, but the defendants refuse to give us any information whatever, and I am using the best information available and advice." Obviously, I didn't lean back in favor of the defendants.

When their principal witness was put on the stand, Senator Gore's lawyer said, "What is the transfer price at which this

material is paid when the shipper," namely, Jersey Miniere, "delivers it to the processor," the Belgian company that actually processed it. These were two independent companies. There had to be a price.

The witness said, "I am not going to tell you that."

Senator Gore's lawyer said, "You have to tell us that; it's the crux of the issue."

"No," he said, "I won't tell you."

The arbitrators called a recess. They got the two lawyers together and they said to the lawyer for Jersey Miniere, "If your witness persists in refusing to give the information that Senator Gore's lawyer is seeking, we will have to assume that Mr. Strauss' assumptions are correct." Well, they couldn't take that, because I had not been overly generous in estimating the costs, of course. [laughs]

So they said, "We will, but we cannot give it in open court, highly confidential, and there are only a few people in the germanium business around the world, and we can't let this information become public."

So everybody in the room, which was only--there was no public present, there were just the witnesses, the lawyers, and the principals. So everybody--

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Strauss: --they showed that there was substantial value in the material.

Swent: Was it near the figure you had?

Strauss: It was lower, but not too far out of line. But of course, it had fluctuated, and that was what I didn't know. It wasn't a constant over all the years from '87 to '92 when the hearing was held. And in fact, in '91 and '92, the price of germanium had dropped to the point where there was no net value worked back to the mill. But prior to that, there was net value.

So the final decision, which was handed down by the arbitrators after the course of a week, was that the Gores were entitled to 4 percent of those values, calculated month by month, with interest compounded at 10 percent per year, from the time when it should have been paid until the time it was actually paid. The amount really wasn't huge, but it was a great moral victory for the senator, who didn't want to be cheated.

And the spinoff was, of course, that there was germanium in the ores taken from all the other farms around, going all the way back to 1980 or '82. So these poor Tennessee farmers got a windfall. There had been some discussion as to whether this should be a class-action suit, but the Gores calculated that if they tried to represent the maybe thirty or forty other principals involved who had leases with the company, there would be infinite delays: What lawyer do we use, what do we pay the expert witnesses, and so on. They wanted to get the thing over with, so they had proceeded on their own. But it was like a class-action suit in that the spinoff was that Jersey Miniere had to pay back royalties to everybody else. You can imagine from a political standpoint, that hasn't done the Gore families any harm.

Swent: No, not at all.

Strauss: In this whole thing, I never understood why the Belgians were so intransigent on this question, dealing with somebody with the political influence of the Gore family. An American company, I think, would have been delighted to have acceded to the Gores' request. It wouldn't have been a bribe, but it would have been a way of communicating with people who could have significance on air pollution and water pollution problems, labor problems, tax problems. At least you'd get a sympathetic ear, instead of being at cross purposes with them. To me, it was--it's still a mystery, of why they were so absolutely intransigent. Every time any request was made, if it even mentioned the word germanium, the lawyer would write back, "No, no, you're not entitled to that information, period."

Swent: Different approach.

Strauss: A different approach.

Well, we spent a week in Nashville. I took Janet down with me. The senior senator and his wife were at the same hotel. We had dinner together every evening; we became very good friends as a result of that. In particular, Janet has a very warm feeling for Mrs. Gore, Sr. She's a wonderful woman. Just in February of this year, we got a phone call from them, or March, I forget which. The senior senator had been asked to give the annual Lehman lecture at Lehman College in the Bronx. The college was named for Senator Herbert Lehman who represented New York in the United States Senate in the early fifties.

Well, Senator Gore is perhaps the last remaining colleague of Senator Lehman, and they happened to have been very good friends. So this was the twenty-fifth anniversary of the naming

of Lehman College, and Senator Gore was asked to come up and give the speech, which he did. We had dinner with them the night before he gave the speech, and then we went to the college to hear his speech, which was excellent. So we are good friends.

Swent: Isn't that nice.

Strauss: Yes. And the vice president actually I met on two occasions. The second occasion when I flew down to Nashville, his father was waiting for me at the gate, and as we walked toward the exit, he said, "Have you ever had a senator be your chauffeur before?"

I said, "Yes. Senator McClure of Idaho and I were very good friends on the silver issue, and Senator McClure has driven me on several occasions."

"Well," he said, "Senator Gore of Tennessee is waiting for us outside the gate." This was just before he was nominated to be vice president. So he drove us into town and sat with us in the lawyer's office. So that's the Gore story.

Swent: We haven't talked about Magma yet.

Strauss: Before we get to Magma, I think we need to talk a little bit about some other Asarco operations you and I talked about off the tape.

Neptune Mining Company, Nicaragua

Swent: Right. We've completely omitted mention of some that were important.

Strauss: Yes. When I was enumerating at the very start of this interview the countries where Asarco operated, I mentioned the investments in Canada, Australia, Mexico, and Peru, which were the principal countries for foreign investment. But in fact, Asarco's operations were more far-flung than that. For many years, Asarco was the largest stock holder in the Neptune Mining Company operating in Nicaragua. Its partner in this was the company called Rosario Resources, which had significant operations in the neighboring country of Honduras. In the Sandinista uprising against General Somoza, the Neptune properties were eventually expropriated. But up until that time, it had been a substantial producer of gold, silver, and even some base metals, zinc principally.

It was a relatively small operation, but quite successful, and several of the people who managed the Neptune operation eventually became senior officers at Asarco. I am thinking particularly of Clarence Nelson, who was eventually named vice president in charge of mining in New York. He was well known in the industry as "Swede" Nelson.

The Saudi Arabian Mining Syndicate

Strauss: Another country in which Asarco had had operations was Saudi Arabia. In the thirties, during the gold boom that followed the increase in price to thirty-five dollars an ounce, a geologist involved in the oil industry named Carl Twichell had spotted a curious formation on the surface near the port of Jiddah. Investigation showed that this was an accumulation dating back to the B.C. era of ancient tailings of gold ores that had been extracted that had accumulated on the surface there. The tailings ran over one ounce per ton in gold, incredibly rich by modern standards, but obviously in prehistoric times less so.

The deposit was situated close to an oasis, and over the centuries, the various camel trains had paused there for camping overnight, securing water supplies. The consequence was that the retreating of these tailings presented a unique metallurgical problem, because so far as I know, this is the only deposit treated for recovery of gold in which the presence of camel dung was a major consideration. [laughter]

Exploration of the area proved that there was a large gold deposit remaining that had not been exploited by the ancients, so the Saudi Arabian Mining Syndicate was formed in which Asarco was the majority holder, but there were other participants, including some of the reigning Saudi family. The mine operated quite successfully prior to World War II, and then again after World War II. My impression is that it was finally closed down sometime in the 1950s.

But I recall with some amusement that once a year, members of the Saudi royal family would come to New York, and the mining department would tender a dinner party for them at the Waldorf-Astoria. One feature was that to pass the food and drink around, a toy train was installed on the tabletop, because one of the Saudi aristocrats was very fond of starting and stopping the train. He could get his cream, sugar, salt and pepper, or other goodies by dispatching a freight train around the table surface. [laughter]

That property was shut down, as I said, in the fifties, but I believe it's being revived or perhaps has now been revived and is once again in production.

Mines in Ghana and Nigeria

Strauss: Another gold operation Asarco had during the thirties boom was the Taquah and Abosso mine in what used to be called the Gold Coast, what is now known as Ghana. During the Korean crisis, Asarco undertook an exploration program and for a short time operated a small lead-zinc mine in Nigeria. I mention all of this just to indicate that the company was on the lookout for mining properties all over the world.

Swent: They had their own exploration department?

Strauss: That is correct. The exploration department was headed for a considerable period of time by a geologist named Clement Pollock, who had come out of the silver belt in Idaho. He had been responsible for the development of the Galena mine. After Mr. Pollock's retirement, Thomas C. Osborne took over the direction of the exploration efforts. When he was promoted to executive vice president, he was succeeded by Richard C. Brown.

Swent: The two Osbornes are not related, I guess?

Strauss: The two Osbornes are not related, but since one of them is named Tom and the other is Dick, it was fortunate that we were able to find that a timekeeper at the Deming operation in New Mexico was named Harry Osborne. So we had Tom and Dick and Harry on the company books. So that takes care of the miscellaneous countries.

XX MAGMA COPPER CORPORATION, 1989 TO THE PRESENT

Board Representative for Warburg Pincus

Swent: So we're continuing now after our delightful lunch break at the Stockbridge Country Club. Lovely lunch and pleasant time, and now we're back hard at work, coming now to the next career, which was with Magma Copper Company. How did you get involved with Magma? Through friends, contacts you'd had through many years?

Strauss: Well, in December, 1988, I'd been out. When I came back, Janet told me that Donald Donahue had been trying to reach me. Donald Donahue had been president of AMAX, formerly American Metal, at the time that Ian McGregor was the chairman. He had left AMAX for a career with Continental Can Company, but following the merger-takeover of Continental Can, so far as I knew, he was more or less retired, until I heard that Newmont had asked Don to become chairman of Magma Copper. Newmont was in the process of spinning off Magma Copper, which for twenty-five years or so had been a wholly owned subsidiary of Newmont. But the major stock holders at Newmont, Consolidated Goldfields in London, had apparently decided some time in 1985 or 1986 to convert Newmont more or less into a straight gold mining company and to dispose of their copper assets, of which Magma was one of the principal ones.

It was decided by the Newmont board that Magma's stock would be distributed to Newmont share holders. However, Newmont did retain about 15 percent, as I recall it, of the Magma shares, and also, in order to help the company in its newly-found independence, had bought some preferred stock, which gave Magma some cash with which to deal with their major replacement program. They had to rebuild the smelter at the San Manuel site in order to bring it into compliance with the strict environmental rules. I knew that they were almost completed with this rebuilding job at the time of the spinoff. In fact, I think

the new smelter started operation some time in 1988. The spinoff had occurred in March of 1987.

Apparently, Newmont's retention of some shares of the preferred stock meant that Newmont was still taking a very active role in connection with Magma operations, and there was beginning to be friction on the part of the operating people at Magma with the Newmont people who were trying to tell them what to do and when to do it. There were reports about this circulating in the trade.

Mr. Donahue took his assignment as chairman of the company very seriously. He felt he was under obligations to his share holders, most of whom were independent of Newmont, and he came to the conclusion that it would be best if, in some manner, Magma raised enough money to buy back the shares still held by Newmont, including the preferred stock. Magma had heavy capital expenditures, and it also had debt. To do that financing would not necessarily be easy.

Mr. Donahue approached the firm of Warburg Pincus and Company, with which he had good relations. Warburg Pincus is an investment banking firm that manages several billion dollars in assets on behalf of clients. The vice chairman of Warburg Pincus was John Vogelstein, whose father had been the president of AMAX before Mr. Donahue was president. So Donahue knew John Vogelstein very well. I had heard, though it was common knowledge, that in return for raising the necessary money, which Warburg Pincus did, Warburg Pincus asked for the right to name three directors to the Magma board.

When I called Mr. Donahue back, after Janet reported that he had been trying to reach me, he explained that two of the Warburg Pincus partners were going to go on the Magma board, or in fact, perhaps had already been named to the Magma board. One was John Vogelstein. The other was Christopher Brody. Mr. Donahue asked me if I would consider accepting nomination to be the third representative for Warburg Pincus on the Magma board, and whether there would be any conflict with whatever arrangements I had with Asarco.

I told Mr. Donahue that I would have to speak to Richard Osborne, who by then was chairman of Asarco, because I certainly did not want to do anything that would in any way make Asarco uncomfortable. I suspected then, as indeed proved to be the case, that Asarco would raise no objections to my joining the Magma board, but would require that I give up my consulting arrangement with Asarco. I did indicate that the idea of joining the Magma board was attractive to me, because I knew that as a

new-found independent company, there were problems, and that they would need, for example, once free from the affiliation with Newmont, to do their own marketing. I thought perhaps I might be useful.

So I called Mr. Osborne the following day, had a very pleasant conversation with him, said that I did not want in any way to create any feeling of rancor if I did accept the assignment to the Magma board, that it was by no means certain that I would be nominated, that I still had to interview Mr. Vogelstein and Mr. Brody, but I thought it well to talk to him before I did so, that I was prepared to give up my Asarco consultancy arrangement, which was already almost ten years old, following my retirement in '79.

Mr. Osborne said that he would speak to his general counsel and would call me back and let me know what conditions, if any, they'd apply.

When he called back, he advised me that there would be no problem about my joining Magma, provided I gave up my Asarco consultancy, and further provided that if I was making a speech to a group or writing an article for publication, I should not identify myself as being associated with Asarco, even as being the former vice chairman of Asarco, although of course everybody knew that I had been a vice chairman. But it was simply that the appearance of my name as being affiliated with Asarco might raise questions of conflict of interest.

This was very understandable, and I assured Mr. Osborne that this would be so.

With a slight chuckle, he told me that I did not need to alter my biography or résumé and excise all references to Asarco, and I said of course. He said, "We know those are the facts."

At any rate, I have continued to be on excellent terms with Mr. Osborne. There has never been any problem about the fact that I am now advising a competitor of Asarco's.

So in the course of a day or two, I went down to the Warburg Pincus office, and Mr. Vogelstein recalled that when he was much younger, his father had in fact introduced me to him, but we had lost track of each other. His father had long since died. His father was an exceptionally able gentleman, and one of his keen interests was silver, as mine had been, and we had many occasions to exchange views about the silver market. So I left a copy of my résumé with Mr. Vogelstein, as well as a copy of *Trouble in the Third Kingdom*, which he had not previously seen. He said he

would look this material over and could we meet the next week for lunch.

When we met for lunch, he had Mr. Brody also present, and a third Warburg Pincus gentleman, a considerably younger man named Stewart Gross, who was to be more or less the point man in following Magma affairs in detail. We had a very good luncheon meeting, and talked about the copper market at some length, and then the following week Mr. Vogelstein called up and said, "We have advised Magma that we would like you to be named to the board."

My election to the board was at the February meeting of the board, which was in early February--

Magma's Management History

Swent: That would have been 1989?

Strauss: That's correct.

When I joined the Magma board, although Mr. Donahue was chairman, the chief executive officer was Mr. J. Burgess Winter, who was president of the company. Mr. Winter had himself only joined Magma in August of 1988, a few months earlier. It happened that the previous president of Magma, who was in charge of operations at the time of the spinoff, was a gentleman named Brian Woolfe. Mr. Woolfe was an experienced operating man who had been in the Newmont organization for several years and had been asked to take over Magma at the time of the spinoff.

He died very suddenly as the result of a heart attack when he returned to Tucson, where the Magma offices were located, from a visit to Denver, where he had been conferring with Newmont people. His death in May of 1988 was a great shock. Newmont had temporarily assigned one of their other key executives to be acting president.

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Swent: You were saying that when Brian Woolfe died, an acting president had been named.

Strauss: Had been named by Newmont to take over, and then a committee was appointed by Mr. Donahue, of which Mr. Donahue himself was a member, to search for a new president, whether from within the

Magma organization or outside. At that time, although the refinancing that I referred to had not yet been completed, the affiliation with Warburg Pincus had already been made, and so Mr. Vogelstein was one of the people on this search for a new man. I forget who the other members of the committee might have been. I'm sure that Mr. Donahue took an active part.

As I said, Woolfe's death occurred in May. A number of people were interviewed, but by July, the committee had made up its mind who the new president of Magma should be. They had interviewed Mr. Winter, who at that time was number two in the chain of command at the Kennecott operation in Utah, reporting directly to Frank Joklik, who was the CEO of Kennecott.[1]

Mr. Winter was born in Northern Ireland. He went to school in Ireland, but shortly after graduation as an engineer accepted a post with the Anglo-American organization in South Africa. His duties down there had included active participation in a nickel-copper property that Anglo had in Botswana, as well as work at the head office in Johannesburg. He rose very rapidly within the large Anglo-American organization, so that when a few years later the Anglo management decided to branch out into North America and actually arranged to purchase Inspiration operations in Arizona, which had been partially owned by Anaconda but were then part of Atlantic-Richfield, the oil company, Mr. Winter was sent to the United States to play a role at Inspiration, where I believe he was also second in command.

He worked at Inspiration for several years, did very well, and was recruited by Kennecott when they embarked on their mammoth modernization and rebuilding of the whole Utah structure, new concentrator, redesign of the pit, and all of the other things that they did.

As a consequence, he attracted a lot of attention in the mining community, because while Mr. Joklik was in charge, the real responsibility for managing the rebuilding rested on Burgess Winter's shoulders, and it was a good job completed on time, within budget.

When he got the opportunity to come to Magma as CEO, he was very eager to proceed because he felt that he would like to be in full charge of something, and this was a real challenge. He was exceptionally well qualified because of his experience in regard

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[1]Frank Joklik, interview in process, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1995.

to smelting, and here was the new Outokumpu flash smelter at San Manuel, about to be started up. The smelter is in fact the largest smelter using the Outokumpu process in the world, and it represented a significant challenge. Magma was a very large producer of copper, but it was also high cost, and from the start, Burgess realized that his major job was to get the costs reduced to make it competitive under any conditions.

Marketing Challenges at Magma

Strauss: Actually, when he took over in late 1988, the copper market was strong, the price was high, and Magma was in a position to make a profit. But the Warburg Pincus people knew, and Mr. Winter knew, that the price of copper would not necessarily always be high, and to prepare for possible adverse conditions in the market, it was important to control costs and, if possible, to reduce them sharply.

On the marketing side, both Mr. Vogelstein, as an outside director, and Mr. Winter when he took over, felt that Magma should no longer continue to use Newmont to market its copper, even though Newmont had a contract in place that ran for another year, year and a half. The feeling was that Newmont had not done the best of jobs in this respect. Therefore, one of Mr. Winter's first undertakings was to find a new director of marketing. And it is probable that because of this interest of his in marketing, that both he and Warburg Pincus people felt it would be well to get a director with experience in the marketing of copper. None of the other members of the board had really been involved in copper marketing.

Their search for an employee, a marketing manager, soon centered on a gentleman named John Champagne, spelled like champagne wine. He had been in charge of nonferrous metals trading for a large trading firm based in Minneapolis, Cargill, which had absorbed the major metals trading outfit of C. Tennant and Sons. John had originally been an employee of Tennant's, and then had moved to Cargill.

However, by the end of 1988, Cargill had decided to step out of the metals trading business, and John therefore had been on the lookout for a job. He was quite young at the time--he's still only about forty years old as we speak--but very knowledgeable, very quick, well acquainted with everybody in the metals trading fraternity, and aggressive and he yearned for expanded responsibilities. Mr. Vogelstein told me as I joined

the board that I was to work closely with John Champagne, to hold his hand, to try to make sure that he wouldn't indulge in any reckless speculation, which in fact he never has tried. He has been very shrewd, very careful in what he has done. From the start, John and I have gotten along very well, still do very well. We communicate frequently by telephone, by letter. We keep each other posted on things that we hear in the market that seem to be worthwhile. And Magma's marketing is in excellent hands under his direction.

I had visited Magma's operations before joining the board, but I took the first opportunity I could to go out to Arizona to see what was going on. Let me now define what is involved in the Magma operations.

Magma's Operations

Strauss: At San Manuel, there is the largest underground copper mine in the United States.

Swent: This is just a little bit north of Tucson, isn't it?

Strauss: It is thirty miles north and slightly east of Tucson, not far from the town of Oracle, which is well known. There is obviously a mill and a smelter. In addition to the underground production at the time I joined, some oxide ore on the surface was being mined to be treated by the SX-EW process that we have already referred to. There was a separate facility for conversion of oxide ores to cathode copper by the SX-EW process. It was working well; its costs were much lower than the costs for the sulfide ores treated in the flotation concentrator and then smelted.

In addition to this operation at San Manuel, where incidentally there is a quite attractive town site that was built in the 1950s by the Webb organization, the other major operation of Magma's at the time was the Pinto Valley mine near Miami in Arizona. Pinto Valley had originally been developed by Cities Service, then bought by Newmont from Cities Service when Cities Service, like other oil companies, decided to go out of the copper business. The Pinto Valley operation was lowgrade but open pit, big concentrator, and its production of copper was marginally less than that of San Manuel, but it was a substantial producer.

In addition to the Pinto Valley deposit, Magma through Newmont had acquired all the old Miami Copper workings, which was

one of the first porphyry copper deposits to be brought into production in the United States. While reopening of the old mine workings is not to be expected, there were masses of tailings around, some of which lent themselves to the SX-EW process. There was some SX-EW production from some of the material in Pinto Valley. And furthermore, there was the possibility of recovering copper by *in situ* leaching, in place, of lowgrade copper oxide ores and pumping the liquids to the surface and then treating by SX-EW.

A third operation was located at Superior, Arizona. It consisted of the Magma underground mine. Unlike San Manuel and Pinto Valley, the Superior operations were on narrow veins but carrying fairly highgrade copper ores, running 4 to 6 percent copper. Superior operations had been shut down some years before, but with the price of copper recovered, Mr. Winter at the time had them under study with respect to possible reopening.

So that was the picture in early 1989. Since then, the Magma operations have been enormously improved with respect to both the costs of production, the recoveries of copper from the ores treated, and today, Magma's costs are second only to Phelps Dodge among American copper producers.

A Successful Labor-Management Collaboration

Strauss: This improvement is the result of a revolution that has been achieved in relations with the labor unions. Like other copper companies, Magma had been plagued by bad relations with the unions, headed by the United Steelworkers, which represented most of the underground workers, but there were also other unions involved, like the Electrical Workers, the Carpenters, and so forth. Magma had had periodic strikes, as other copper producers had had. The union workers were hostile toward management.

In '89, it was necessary to renew the then-existing labor union contracts, and negotiations were not pleasant. However, the negotiations were concluded without a strike. Mr. Winter and his director of human relations, Marsh Campbell, set about having a dialogue with the union leaders to ensure that future negotiations could be conducted in a better fashion and, more importantly, to secure their cooperation in making Magma a viable proposition no matter what happened to the copper price.

I won't attempt to summarize all the details of the discussions back and forth. The outcome was that Magma set up

what are called joint union-management committees. The union stewards in the individual units sit down with the managers or superintendents of the particular unit and jointly establish what are reasonable targets for worker activity. The unions have been convinced that unless they cooperate in this way, the future livelihood of the workers is threatened because Magma perhaps would not survive a severe recession, absent a sharp reduction in cost. It took a lot of talking to get them to accept this point of view, but I believe they accept it now.

The carrot that is dangled in front of the workers in exchange for participating in this real effort to improve productivity is that if the goals are met, bonuses are paid which are not contingent on the company's profits, only contingent on meeting the targets which have been mutually agreed to with respect to production or, say, in the concentrator, with respect to recoveries. There are various targets that are set. It's not just tons per man-hour. There are a variety of targets.

In 1993, which was a year of declining copper prices and generally difficult conditions in the industry, targets were met at most of the divisions. The targets are separate for San Manuel from Pinto Valley, and they're separate for the smelter from the mines, and so forth. The targets generally were met in 1993, and the average Magma day's pay worker received during the year an average of better than $2,000 in addition to his wages. That meant over a dollar an hour worked, because the average worker works roughly 2,000 hours in the course of a year. [tape interruption]

Swent: Slight interruption here while we both talked on the telephone to Plato Malozemoff for a few minutes. He has just arrived in Lenox for a brief vacation.

Strauss: Well, I was saying about the meeting of the goals.

The morale of the workers has completely reversed. The relations between management and labor are now excellent, and I really credit Mr. Winter with most of this improvement.

Swent: Is this done at any other mining companies that you know of?

Strauss: I think it will be done now, because people will see that this works. Actually, it is so impressive that the secretary of Labor, Mr. Reich, has come to Magma to see it. The union officials, some of them at times have appeared at board of directors' meetings, which is unheard of in an American corporation. Burgess has been invited to speak at the

conventions of the United Steelworkers, and the whole atmosphere is a different atmosphere.

Development of the Kalamazoo Ore Body

Strauss: The most significant single factor that demonstrates the success of this is the following. In the original San Manuel orebody, there remains only enough ore to continue production for another four or five years at most. Adjoining the original orebody and accessible by the same shaft is another deposit which Magma, when owned by Newmont, acquired twenty or twenty-five years ago called the Kalamazoo orebody. The Kalamazoo orebody is somewhat deeper, its grade is more or less the same, if anything slightly higher than the grade of the San Manuel orebody, but to reach it would require massive investment.

Mr. Winter convinced the workers that if Kalamazoo could be developed, some 1,200 to 1,500 jobs would be saved that would otherwise be lost when San Manuel shut down. He also got them to accept the fact, which was a fact, that given the volatility of the copper market and the uncertainty about price, the company's directors were unlikely to vote the capital expenditure, which may run as high as $200 million, to develop the Kalamazoo orebody. That to justify that development, certain targets had to be met. There was a reduction in operating costs of roughly 30 percent per ton of ore mined at San Manuel.

Swent: My!

Strauss: That was the target. It was accomplished. The directors then did their part. The money has been voted for the work on Kalamazoo. Work has already started. One of the amazing features about this is that in place of a shaft, some of the ore extraction will be by means of incline. You know that this is becoming fairly common in the mining industry. And a mammoth tunnel boring machine was contracted for by Magma to speed up the work of driving this decline, which will be several miles in extent. That work is underway now, and the workers, some of whom had to face the possibility that they would have to leave San Manuel and find underground work elsewhere, are now looking forward to the probability of many years of further employment.

Assuming that Kalamazoo is operated as it probably will be, at roughly the same rate as San Manuel, the life of the mine has been extended from, say, 1998 or thereabouts to well beyond the year 2010. This is a victory for the management, for the

company, but it's also a victory for the workers. It's an assurance that I consider that in all probability would not have been accomplished without Mr. Winter's leadership.

Magma Nevada

Strauss: A second major project that Magma now has underway is in the Nevada properties formerly owned and operated by Kennecott. Kennecott shut these down, my recollection is some time in the 1970s. At the surface around some of the copper deposits, there was material fairly high in gold. With the rise in gold price, a small Utah-based mining company called Alta Gold had made an arrangement with Kennecott under which it took a lease with an option to buy the Nevada properties in order to mine this gold. They were mining gold, but they found after a few years that they lacked the financial resources to do it on the proper scale.

Eventually, they put the operation on the market. Magma made the best proposition to them for a joint venture. Magma took over the operation, subsequently bought out Alta Gold, and then even later used Alta Gold's call to acquire the properties from Kennecott, convinced that it was still a viable copper deposit if properly operated. There has been some exploration which indicates the ore deposits are more extensive than was on the books when Kennecott closed down. Application has been made for operating rights to the authorities, both the federal and state authorities. The last I knew was that after a quite expensive environmental impact statement, which delayed the procedure by well over a year and a half, we are getting the go-ahead to proceed with the development. This will be known as Magma Nevada.

Swent: And where is this?

Strauss: This is close to the town of Ely. Kennecott had a smelter which we will not attempt to rehabilitate. The mill had been pretty much dismantled, the equipment had been sold off, so it will be necessary to build a new mill. Some of the mines have to be unwatered. Even though they're in the desert, there is some rainfall.

Swent: And a lot of underground water.

Strauss: And underground water. But unless something totally unexpected happens, the property will be brought back into production in the year 1996, and the rate of production will be minimum of 65,000

tons of copper a year, and it may be more than that. The concentrates will be shipped down to the San Manuel smelter.

Expansion of the San Manuel Smelter

Strauss: The third major capital expenditure which this company, formerly almost bankrupt, has undertaken, thanks to the financial assistance of our bankers and thanks also to the fact that the copper price has held up far better than most people expected, is a further expansion of the San Manuel smelter. The Outokumpu flash furnace came into production in 1988, as I said. Now, six years later, there has yet to be a shutdown for major overhaul. This is the longest continuous operation of a plant of this size, so far as we know, in the history of copper smelting. The people who operate the smelter have been very ingenious in making minor repairs well in advance of the need for or well in advance of the danger of any shutdown. The plant obviously needs to have such repairs and these have been made.

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Strauss: So the company has been operating this major furnace without an interruption of any consequence--a few hours at a time. The production has been in excess of the alleged rated capacity. The percentage recovery of copper from the material has been well above target. There have been no significant emissions of sulphur into the air that have violated EPA standards, and now underway is the installation of an additional acid recovery unit and other facilities which will enable some increase in the plant's capacity.

While Asarco, my old company, has been gradually retreating from the custom smelting business, Magma has been reaching out for material because the capacity is more than ample to handle the combined production of the San Manuel and Pinto Valley mines. The reopened Superior mines are adding some concentrates, but there is still room for more. Concentrates have been purchased from the Cananea mine, which is in northern Mexico and which can make deliveries to the San Manuel smelter with very little difficulty. The material is trucked across the border.

Swent: And of course, in Cananea, they don't have the environmental restrictions.

Strauss: They don't have, but they have a very poor smelter which is giving them all kinds of troubles. And there is pressure on the

management to bring about some environmental controls. So material from Cananea has come.

Codelco in Chile has actually shipped concentrates to San Manuel. There has been some material come from the Ertsberg mine in Indonesia, and there have been other lots of material from some of our competitors. The company that now calls itself Cyprus-Amax, which was previously Cyprus Minerals, had a toll contract for a period of years, but they've revised their smelter at Inspiration now so that they are not any longer regular shippers. But both Phelps Dodge and Asarco have at times shipped concentrates into San Manuel. So it has become a major metallurgical facility with adequate resources to cope with copper-containing materials, one might almost say from anyplace in the world.

Potential Expansion in Latin America

Strauss: Magma currently has no foreign operations. However, last year the decision was made to open exploration offices in Mexico and in Chile, and with some consideration being given also to Peru, with the thought that we might develop sources of feed in those areas. Like everybody else, the Magma management is very much on the lookout for materials suitable for SX-EW treatment, but sulfide concentrates would be fine. If imported by water, one of the things that is being actively considered is working with the Mexican authorities to greatly improve the facilities at the port of Guaymas in Sonora, because actually, it would be the closest geographically to the San Manuel location, and the truck haul from Cananea has convinced us that there would be no problems about bringing material in from Guaymas to be treated in the San Manuel smelter.

[the following paragraph was added by Simon Strauss in February 1995]

In October 1994, two months after the interview, Magma succeeded in being the winning bidder for the Tintaya mine in Peru, offered at auction by the Peruvian government under its campaign of privatization of government-owned facilities. Tintaya has been operating since the early eighties, producing about 50,000 to 55,000 tons of copper in concentrates. These have been treated in smelters overseas as well as in Peru. If the logistics of transporting concentrates to the San Manuel smelter can be developed on a cost-

basis that is competitive with the present outlets, this could be a valuable source of feed for San Manuel. The Guaymas project might prove a major factor in making this feasible. Because of favorable geological indications, Magma is undertaking exploration at Tintaya that may lead to expansion in the mine's output. The mine is located at an altitude of 14,000 feet in the Andes between the cities of Arequipa and Cusco.

Swent: So this would be something that NAFTA would facilitate.

Strauss: Yes, exactly. And you know that there's a chance that there will be a CHAFTA--there's talk now of a bilateral agreement with Chile. So who knows. This is all in the future. But this gives you some flavor of the complete revival and turnaround that has occurred at Magma since it became an independent company.

Swent: It's really a new company, isn't it?

Strauss: Yes. And largely due to the leadership of Donahue and Winter, with the financial resources of Warburg Pincus to help out.

Swent: It's exciting.

Strauss: It is. It's been very rewarding. Now, when I joined the Magma board, I was already seventy-seven years old, on my way to being seventy-eight. I'm now eighty-three. I was reelected in '92 for another three-year term which will lapse in '95. My colleagues are very kind in suggesting that I am being very useful to the company, but I think there does come a time when perhaps one has to consider whether age should not be taken into account when nominating directors. Magma has no restrictions now in its bylaws or constitution as to the age of the directors that are on the board, but I think very probably that when May of '95 rolls around, which is the next Magma stockholders meeting, I will have terminated my service with the company.

But it's been something that I've greatly enjoyed, not only because of the success that has attended our efforts but also because of the real collegial atmosphere that exists between management and the board.

Swent: That's encouraging.

Strauss: Mr. Winter has an unusually able team of relatively young people. Most of his key executives are in the forty to fifty age range. They bring a lot of enthusiasm and ability to their work, and it really is paying off. So that's the Magma story.

Changes in the Mining Community: Loss of the Mining Club

Swent: I have one question: you've mentioned several times things that were known in the industry, or "it was common knowledge", or "we all knew this", and "we met for lunch" and so on. Where were your meeting places? Was there a club in New York, or a golf course? Where were these things happening?

Strauss: In New York for years, the mining community did have a good place to meet for lunch, which was the Mining Club. At first it was located downtown, very close to the building in which Anaconda had its offices. It had a very lively and devoted membership, one might say. For my part, I would go there once or twice a week and run into people. One of the traditions at the Mining Club was that there was a long table where people who had no specific luncheon engagement with a specific person could sit down, and there was a lot of exchange of industry gossip and knowledge there. As you know, the mining industry is one where people do share information, not like other perhaps higher-tech industries, where there's a tendency to be very closed-mouthed. I'm not suggesting that people don't keep confidences, because there are such things, but--

Swent: There is an unusual amount of exchange of information, I think.

Strauss: There is.

As a number of the mining companies--Phelps Dodge, Newmont, Cerro--moved their offices uptown, the Mining Club opened an uptown branch. Eventually, when--

Swent: Where was this?

Strauss: Well, it's been in several locations. The last one was in the Bankers Trust building on Park Avenue between 48th and 49th Streets. Gradually, over the years, virtually all the mining companies moved uptown. New Jersey Zinc, Kennecott moved uptown. Anaconda never did, but then Anaconda was swallowed up by Atlantic Richfield and really disappeared from the New York scene.

As a consequence, I think the last really active affair at the downtown Mining Club was in July of 1976, when there was a gala lunch at the club for members so that they could get up on the roof and watch the tall ships sail by. You may remember that at the Bicentennial, one of the real features was that tall sailing ships from all over the world came to New York. They entered the harbor on the Fourth of July, and the Mining Club had

a lunch on that day, attended by many of the people you've interviewed, I'm sure. I was not there; I was here in Lenox on that day, so I did not participate.

But the Mining Club in uptown New York continued in existence I would say until '83 or '84. Then when Phelps Dodge and Newmont both moved out of town--they were the last two major companies that were uptown. Asarco continued in New York, but it was downtown, and the length of time involved in coming uptown to the Mining Club made it a rather rare occasion when any Asarco person would show up there.

With Newmont and Phelps Dodge moving out of town, the core of the people who attended was lost. The vice presidents in charge of mining loans or whatever of the banks, some of the security analysts, independent consultants like the Behre-Dolbear people, would continue to go there, but there was not a large enough group to draw on to keep the club alive.

So a decision was made to close down the Park Avenue club, and to get privileges for Mining Club members at the Chemists' Club, which was then situated at 41st Street between Madison and Park Avenues. The Chemists' Club was an old building. The facilities for lunch were a little bit on the antiquated side. The food was quite good, but--. The management of the Chemists' Club about six years ago made a deal with a British firm, sold their building--they had a building that was, I think, ten or eleven stories high, had a number of bedrooms in it so out of town members could stay overnight, or for that matter, suburban members like myself if we were coming in to a late dinner or a theatre or something, if we wanted to stay in town, we could get lodging there. But as I say, it was quite antiquated.

So a deal was made with this British firm to sell the building to them. The Chemists' Club actually owned the building. This outfit undertook to completely modernize the facilities, and then lease back most of the building to the Chemists' Club. During that interim, we were given reciprocal privileges at the Princeton Club and a number of other clubs in the city.

Well, the building is still there. The British ran out of money, apparently, and it's shuttered. It's sort of pitiful. One block from Grand Central Station; a superb location. Only this last year did the Chemists' Club reopen in a new area. The new facility is on 45th Street, at 40 West 45th Street, between 5th and 6th Avenues. It's an old hotel which has been beautifully modernized. It's called Club Quarters, but the Chemists' Club is the principal occupant. It has an attractive

dining facility, very modern and very convenient also, the location.

So when I want to see people, I usually arrange to meet them at the Chemists' Club. But there is no long table. There's no place where the mining fraternity can meet on an informal basis like that. I run into an occasional mining man at the Chemists' Club, but only very occasionally. I have encouraged two people from Magma's management to become out-of-town members, because there are sleeping facilities. They often have to come in to New York on very short notice. The room rates are lower than in the midtown hotels of equal quality, and it's a very good place for somebody like John Champagne, for instance, if he comes to New York to see one of his customers in the metropolitan area, to take that customer to lunch.

The problem with lunching in a commercial facility for a marketing man is, when the check arrives, there's always an argument about who pays it. If you invite somebody to meet you at your club, there is no argument. The situation is clear, and it avoids any possible difficulty.

Swent: When the Warburg Pincus people--Vogelstein--had you for lunch, for instance, where did you have lunch?

Strauss: Well, we had lunch at a place called the Board Room, which was a well known lunching club, but it wasn't devoted to any particular trade. It was just for senior executives.

Swent: It seems to me it has been a loss not to have the Mining Club as a kind of central "village well" type of place.

Strauss: That's true. But of course, the loss is due to the fact that New York has ceased to be, as it used to be, mining headquarters for the country. Denver, San Francisco, Tucson, and even Salt Lake come closer to filling that role today, or Phoenix, where Phelps Dodge is. There's the Southwest Mining Club, which is now a foundation. I'm not sure what eating facilities they have. I think there is an arrangement at Denver for the mining people. So it is too bad.

Swent: Because those exchanges of information are vital.

Strauss: Yes, they're very--particularly, I think it's useful to the people who are in the exploration end of the business. The exchange of gossip, "Have you heard what the new regulations are in Peru with respect to currency exchange?" Or, the new mining regulations, or, "Have you heard about the great new find of diamonds up in the Northwest Territories in Canada?" There's a

lot of gossip of that kind which is very useful for mining people to be able to learn, other than just reading the trade press.

Swent: Well, the trade press always has a little bit of a lag.

Strauss: Yes, it has a lag. And also, if a geologist has just returned, let's say from the new diamond fields in the Northwest Territories, for another geologist to be able to ask him what's really going on, you get something that you won't get from the trade press. So it's a miss.

Incidentally, during the interim, when the Chemists' Club had these exchange privileges at the Princeton Club, that worked out beautifully for me, and my wife even. It's on 43rd Street between 5th and 6th Avenues. If we were going to the theatre in the afternoon, it was a great place to meet and have lunch and go off there. It's a very well run club with first class food. Incidentally, the Cobb salad is one of the specialties.

Swent: Oh, good. [laughs] Well, those things are important, the little personal exchanges.

Strauss: Yes.

Swent: Has golf been of importance to you?

Strauss: Well, when the Mining Club was really active, we used to have an annual golf tournament. It was usually at the Sleepy Hollow Golf Club near Tarrytown, New York, because George Krueger, originally of the Chase Bank, and a gentleman named Charlie Moore--he was the head of the International Copper Research Association before Bill Dresher--were both members of Sleepy Hollow. They would arrange for some weekday afternoon to have a tournament there. There would be fifty or sixty mining people teamed up in groups of four, and there were all kinds of ridiculous arrangements with regard to handicaps and so on so everybody had a chance to win. Followed after the end of the golf by a dinner, so that you got to see people that you hadn't actually played with.

Those were very pleasant affairs. I made it a point to go to every one of those that I could. It wasn't always at Sleepy Hollow. Incidentally, one time when I played at Sleepy Hollow with a group of Japanese metal people, one of them said to me, "Mr. Stlauss, great golf course! Sreepy Horror." [laughter]

XXI PERSONAL ITEMS

Swent: Do you think we've reached the time for a little retrospective on your family? We haven't caught up with your family.

Strauss: Yes, I think it's appropriate. I've made a number of references to Janet.

Wife Elaine Mandel Strauss

Swent: The last we heard of Elaine, you were just moving to New Rochelle.

Strauss: That's right. Well, Elaine, as I've said, became ill in '45. She died in 1982. She had almost thirty-seven years of living in a wheelchair, and adapted to it extremely well. One of my preoccupations when she was first ill was the reaction of our two children, Peter, then age five-plus, and Susan, then age three-plus. I was really concerned that perhaps they would ignore their mother because of her physical limitations, and that this would have a terribly adverse effect on her frame of mind. I'm glad I worried about it, because it proved to be a completely fruitless worry.

Perhaps because after she finally came to New Rochelle, having spent more than a year in hospitals, she was always home. This meant that the children always had somebody to run to with their problems, to get advice, to seek comfort for any perceived problems or difficulties they had with their friends or with school. At any rate, both of them grew up to be very considerate of their mother and very helpful.

Susan was too young to be involved in public school, but when Peter came to New Rochelle in 1946, he was already well past

his sixth birthday, and he had been going to school in Washington, kindergarten. The person that took him, at my request, up to school and registered him for class was none other than Mrs. Mark McCloskey, the mother of my second wife. The principal of the school, on hearing the details that Peter's mother was ill and that Peter was just being moved into New York, that Mrs. McCloskey was not his grandmother but was a great friend of the family, that he was a very bright boy, said, "Well, he's not yet seven, so we'll start him in kindergarten."

Mrs. McCloskey said to him, "You're making a great mistake. This boy is well advanced." He was reading quite voluminously at the time, he had started to write, he could do arithmetic sums quite well.

Well, Mr. Jenney, the principal, said, "You'll have to leave that to us to judge." So Peter spent three days in kindergarten and was then promoted to first grade.

Susan went to a play school for two years and then also registered at the same school, which was really a splendid elementary school called the Roosevelt School--not Franklin, Theodore Roosevelt. It had been named long before Franklin became president.

We lived about three quarters of a mile from school. Many of the children were motored to the school by their mothers. School busing was not as prominent then as it is now. Our children walked, except when the weather was poor.

It was difficult for us to make certain kinds of arrangements. One real concern of mine was when I was home, I could lift Elaine out of her hospital bed and put her in her wheelchair so she could come to the table for meals. At any rate, the doctor had indicated and her therapist had indicated the more time she could spend sitting upright, the better off she was. But what to do when I was not at home?

Then we hit on sort of a unique solution. I'm not sure it was fully legal. The one male that we could count on to come to the house every day during the week--I was home on weekends--was the postman. So I waited around one day until the postman arrived, and I asked him if he would be willing to do that. He was a very nice man; I've forgotten his name. Every day when he came, roughly at eleven-thirty, by which time Elaine was about ready to get up, he would pick her up and put her in her chair. And then he'd come back at two-thirty or three and put her back in bed. Eventually, the need for doing that disappeared because

automatic mechanical lifters were put on the market, and we bought one.

Swent: But they didn't have them in those days?

Strauss: They did not have them in '47 and '48.

One of the biggest problems we had was help. We had to have not only an attendant for Elaine but somebody to keep house. We searched around, we hired couples, we had various nurses, some of whom were very good, others were not. Some of them were adept at doing physiotherapy; others of the nurses couldn't. So we made an arrangement with the New Rochelle hospital that one of their physiotherapists would come to the house three times a week and give Elaine treatment.

There were lots of other problems that were met--

Swent: You were traveling, of course.

Strauss: My traveling was particularly difficult. At the start when I had to travel for an extended period, Elaine's mother might come and stay in the house. My mother by then was not well enough to do that. Elaine's mother would come. But in time, we found a person who was fully competent to carry on when I was away on trips, and Elaine preferred not to have her mother or anyone else come to the house if she could get along without them. This was the nurse that's referred to in Elaine's book, *In My Heart I'm Still Dancing*, as Arteal.

Helper Arteal

Strauss: She was a black woman, very strong, with a wonderful character, and very able. She started out with us as a cook and housekeeper, but she observed what the nurses were doing for Elaine, and one day she came to me and she said, "I think I can do this myself. I've been watching." Elaine didn't need medications as such; she did take some pills, but anybody can administer pills. But there was nothing that required any kind of trained nursing care. It was just a matter of giving her a bath in bed, making sure her face and hands were washed. Mostly it was a matter of getting her dressed and undressed. And Arteal was very adept at that. She was really the answer to our prayers, not only because of her ability to deal with Elaine but because both our children liked her so much. They accepted her discipline.

The house we had was a two-story house. The children and the attendants slept upstairs; Elaine and I slept on the ground floor. Because we had stairs, no elevator or escalator, Elaine never got up, or very rarely got up to see what was going on upstairs. So she relied on Arteal to make sure that the children were taking proper care of their things and their rooms weren't too untidy, et cetera. She was a big asset to us.

Swent: How many years was she with you?

Strauss: She was with us on and off for well over twenty-five years, but she was constantly with us for thirteen years. Then she got married, and by that time the children were grown, and we were able to find other people to live in to take care of Elaine.

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Strauss: Both children went away to summer camp. Peter started earlier, but then the two of them went to the same camp in the Adirondacks for a couple of summers. I took Elaine there to see them. The drive was too long for her. I was able to fly her up to Saranac Lake. She loved flying, incidentally. And it was always a problem, because I had to carry her into and out of the plane.

Swent: Good thing you're big and strong.

Strauss: Yes. But Arteal would drive the car up and meet us there, so I would take my two-weeks' vacation there. Later, as the children got older and Peter went off to Europe on the Experiment for International Living, and Susan did different things for summers, Elaine and Arteal in 1952--well, I guess Peter hadn't gone off to Europe yet--but anyway, in the summer of '52, Elaine and Arteal came up for two weeks at a little inn in Sheffield, Massachusetts, just south of Lenox.

When I came up during the intervening weekend, Elaine had arranged to get tickets for the concert at Tanglewood. Because she was in a wheelchair, we were given the privilege to park in what was then called the box parking lot, and the pass we had on the back had instructions as to how we would reach the lot. It involved our coming along what I now know to be Stockbridge Bowl. Elaine was enchanted when she saw the lake, because she loved lakes. She had been a strong swimmer and very fond of canoeing before her illness.

So that fall, I came up to Stockbridge Bowl, drove around the lake, found a sign indicating that there were some cottages for sale or rent, made arrangements which resulted in our renting the cottage for one year. Later, we bought it. I didn't want to

buy it that first year, because I didn't know whether Arteal, a black woman, would enjoy living in relative isolation up here. She was not fond of classical music, so Tanglewood per se meant nothing to her. But she did like it.

So we bought the cottage in 1953. We've owned it now for forty-one years, and it has turned out to be probably the best investment I ever made.

Swent: An ideal location.

Strauss: Yes.

As she grew older, Elaine reached out for activities. She was surprisingly successful, considering her limitations. Once a week, an artist friend of hers would come to the house and conduct a painting class. With the limited use of her left hand, Elaine could work on a canvas roughly twelve by eighteen inches, and she got great satisfaction out of trying to paint some pictures, some of which we still have.

Her brother, Robert, had married a French lady shortly after the war, Simone. Simone had come to this country, and Robert and Simone lived not too far from where we lived in New Rochelle. So Simone would come to the house once a week, and various of our friends would come, and there would be a weekly French class. I can't say that any of the ladies really became skilled in the use of French, but they enjoyed laughing at each other's mistakes during the afternoons. The friendships that Elaine and Simone made then with these women have persisted ever since.

Still later, a group of parents who had children who had had polio in Westchester County decided to form something called the Polio Parents Club. Elaine enlisted in that and was very active and very interested. The principal thing she could do was to do the telephoning for the meetings and talk to people who had problems to encourage them. The club used to have an annual Christmas party and an annual spring party, and we had directors' meetings, usually in our house, to save her the difficulty of getting to a distant location at night.

I think that perhaps the most amusing thing that happened one year, for the Christmas party, Elaine was responsible to enlist a clergyman to say the Christmas prayer for us. In previous years ministers of various faiths had performed this function. Elaine approached the rabbi that we knew best in Westchester, Rabbi Shankman, who was extremely fond of her. He said, "Elaine, you can't be serious!"

She said, "Yes, this is an ecumenical event." [laughter]

He said, "Well, it's a Christmas party."

She said, "Well, you can convert it if you want to into a Hanukkah party."

So he came, and gave a really very--I shouldn't say amusing --but very relevant blessing.

Still later, Elaine developed an interest in a rehabilitation center that was built in Westchester County, where New Rochelle is, in the town of White Plains, the county seat. It was largely financed by the Burke Foundation. Mr. Burke had been one of the founders of the big department store of B. Altman and Company. And so it was known as the Burke Institute.

The physiotherapist who was treating Elaine by that time was a gentleman named Anthony DiRosa. Mr. DiRosa told Elaine that many of the people at the rehabilitation institute were in despair when they learned that they were faced with having to adjust to living in a wheelchair. These were not just polio people; in fact, following the Salk vaccine, the number of polio victims was dropping off. These were people who had had strokes or who had had accidents that involved their spine, including diving into empty swimming pools, which children have been known to do, motorcycle accidents and the like.

One of the patients was a woman whose husband was a policeman, and in the course of an argument, he shot her in the spine. She would have preferred at that point to have died, but she was faced with living with permanent paralysis in the lower body.

So Mr. DiRosa said to Elaine, "You've learned how to adjust to living in a wheelchair. Why don't you come up to Burke and visit some of these people?" By that time we had a lifter attached to the top of our car so if I wasn't present, she could be lifted out of her wheelchair and into the car, and the wheelchair folded and put in the back of the station wagon. Then, when reaching the destination, the reverse could happen. So her attendant would drive her up to Burke, and she would spend an hour and a half or so at Burke, talking to patients.

The Burke staff considered her advice so valuable that finally they made available to her a battery-operated chair which she could operate herself with her one useful hand. She could make it go forward, go back, or turn. She got enormous enjoyment out of whizzing around the halls of the Burke Institute in that,

except once in a while she got herself locked into a room and wasn't able to reach the door. But she was always rescued.

Swent: She must have been a wonderful inspiration to people.

Strauss: The result of her doing this work, for example with this woman that I talked about with the spinal injury, who was absolutely autistic for a while, refused to speak to people, wouldn't speak to Elaine when she first came. Elaine thought about it and came home, and with the help of a typewriter specially devised for quadraplegics by IBM, which had a keyboard that she was able to hold on her lap so that she could bring enough pressure with her one hand to operate it, she decided to write out some ideas about wheelchair living to hand to this woman, which she did.

The woman took it. The next time Elaine came, she was not in her room, she was out in the hallway, quite--. She had started to speak.

Swent: That was a transforming experience.

Strauss: So it was the consequence of this experience at Burke that made Elaine decide to do what her mother had been urging her to do from the time when she first got the typewriter, and that is to write a book about her experiences. And that book, which you have seen, called *In My Heart I'm Still Dancing*, was actually accepted for publication by a major publishing firm that made an advance. But after reading it, they proposed to make some major changes in the text. They assigned one of their ghost writers to work with Elaine. The product of that was a soap opera and not at all the book that Elaine had intended, which was to advise people on how to cope with wheelchair living.

She was very discouraged and upset about it, and she told me she didn't really want the revised version to appear. I said, "Well, in that case, it won't appear. We'll publish your book as you have written it." And we had the help of Eleanor Furman, whom you've met, in putting the document together. My secretary was kind enough to retype it all for her. Another friend of ours, a lawyer, had a son-in-law who was the head of a major publishing firm, and through him, we were introduced to a printer. We had the book printed in exactly Elaine's language, with the type and the color and the size of pages and type that Elaine wanted.

It would turn out not to be too expensive. By that time, Elaine's mother had died and left her some money, so she had ample funds to pay for the printing of her book. It has been distributed for the most part to rehabilitation hospitals and to

organizations for the disabled. We've had wonderful reviews from such publications as the journal of the Easter Seal people. Dr. Jonas Salk wrote her a beautiful letter. And it was a great success.

It finally appeared in print in 1979. The letters that she got after we distributed the book were, I think, the best tonic she could have had.

However, in the spring of 1982, she developed a respiratory infection. We took her to the Portchester hospital; it's called the United Hospital, an excellent suburban hospital, where she received very good care. She was put in the emergency unit, because she developed pneumonia, and as I think I said earlier, she really had only one effective lung.

The doctors did their best to save her. By the end, in order to enable her to breathe, they had to perform a tracheotomy in her throat. That only lasted about two or three days.

I got in touch with our daughter, who was living in Nevada. Our son by then was living in Westchester County, so he was immediately at hand. Susan took the plane and arrived. We went to see Elaine in the morning, and it was that evening that our doctor stopped by the house to tell us she had died. It was a peaceful death.

Son Peter Strauss

Strauss: I haven't said too much about the children. I'll just touch briefly on their careers. Our son, Peter, was valedictorian of his high school class. He went to Harvard. At the time he went, he thought he wanted to be a research scientist. He majored in physics and chemistry. He graduated summa cum laude from Harvard, a member of Phi Beta Kappa.

But I had been convinced from the start since I had a lot of dealing with people in the scientific field that the relative isolation he would have if he lived in laboratories was not for his temperament, and I had encouraged him to think about law as an alternate. Halfway through Harvard, he took a course with Judge Freund, which convinced him that I was right. So he applied for admission to Yale Law School.

He was made editor of the *Yale Law Review* the year before he graduated, and he graduated as valedictorian of his class at Yale Law School.

His first job was working as a clerk for a judge of the court of appeals in Washington, Judge Bazelon, but the following year, he was a clerk for Justice Brennan of the Supreme Court, a man he admired greatly. By the time he became Justice Brennan's clerk, he had been married to a young woman he had met when she was a freshman like him at the Yale Law School. She had not persisted in the Yale Law School, however. Her name was Joanna Burnstine. Joanna dropped out of law school, and eventually went into social work.

After Peter's service with Justice Brennan, he accepted an appointment from the Ford Foundation to go to Haile Selassie University in Addis Ababa. The Ford Foundation was spending a lot of money on the law school in Ethiopia on the theory that the law schools in other African countries, which had formerly been either French or British colonies, would be unduly influenced by French or British law, and that it was a good idea to stimulate the growth of a law school which would be indigenous to Africa. Since Ethiopia had never been a colony, they thought that was the place to have such a school. This was before the revolution that deposed Haile Selassie.

Peter spent two very happy years teaching criminal law in Ethiopia. He got to know the emperor. He did the editing of a book that was translated from an obsolete African language called Geez into English by a scholar of Geez. Peter, of course, could not do the translation, but he could bring this book into the concepts of modern law, so that was what he was asked to do as the editor. It's an interesting book, because like the Koran and the Bible, it contains a lot of regulations and ordinances about the conduct of human life in it, and from an Ethiopian standpoint, that was the beginning of their legal system. It's sort of a unique document. Peter's own copy of the document is signed by the emperor.

Following his return from Ethiopia with Joanna, he served for three years with the solicitor general in Washington, trying cases before the Supreme Court. He then accepted an appointment as a member of the faculty of the Columbia Law School, where he still is. But for two years, he was granted a leave of absence to serve as general counsel for the Atomic Energy Commission.

Swent: An outstanding career.

Strauss: His specialty is administrative law and he's the current editor of a textbook on administrative law originally written by Professor Walter Gellhorn. It's a standard textbook used in law schools.

He and Joanna have two children, the older of whom, Benjamin, is about to graduate from Yale, the younger of whom, Bethany, is still in high school.

Daughter Susan Strauss Orr

Strauss: Our daughter, Susan, following graduation from New Rochelle High went to Oberlin College in Ohio, met a young man there with what she described as "chocolate brown eyes" in the letter she wrote her mother. So desperately in love. He was ahead of her. The year he was about to graduate, they got married. That was 1962. Their first child, a daughter, who calls herself Katie now but who was named Katherine Louise, was born later that year.

Susan's husband, Sam Orr, following graduation, enlisted. You will recognize that 1962 was at the start of the military problems that later led to Vietnam. However, because he had language skills, the army assigned him to the Fort Ord language school outside Monterey, California. He learned Czech, and consequently in due course, he was assigned to duty in Germany close to the Czech border, monitoring Czech radio broadcasts and other languages.

While they were in Germany, their second child, David Orr, was born. That was in 1964.

In 1966, I guess it was, Sam had completed his tour of duty. They returned to the United States. Sam then took graduate work at the University of Chicago, hoping to use his knowledge of Czech to develop skills that would make him useful either in the foreign service or in business dealing with Czech industry. However, he got waylaid on that, and became interested in politics, never quite got his master's degree, although he was on the threshold of it.

Instead, he linked up with a gentleman, a politician from New Hampshire whose name escapes me, who had just been elected to the Congress, went to Washington, worked very briefly in the Congress, and then got a job working for the weekly publication published in Washington that covers all government affairs like a tent.

Swent: Federal Register?

Strauss: No, it's not a government publication; it's an independent publication published weekly. It's quite well known: the *National Journal*. He was made, for no particular reason, their reporter on the Defense Department and military.

They remained in Washington until 1970 or '71. Susan at the time was mostly a housewife looking after her two young children, but she was also very interested in political affairs, particularly in women's organizations. She met a lady named Maya Miller. Maya Miller decided to run for the Democratic nomination for the Senate from Nevada and asked Susan to come out the following summer to work on her campaign. In return for this, she offered Susan a free scholarship for one of the children at the summer camp which Maya and her husband operated. We said that we would pay the tuition for the other one.

Swent: This was in Nevada?

Strauss: In Nevada. It was on a ranch on the side of Washoe Lake south of Reno. Beautiful area; really beautiful area.

Swent: Sounds like fun.

Strauss: The principal activity for the campers, as far as I found out from my grandchildren, was horseback riding, for which they both developed a great taste.

So Susan agreed to that. In the fall, when she returned to Washington to rejoin her husband, she found out that he and she were no longer as sympathetic. He had decided to go live in New Mexico. So when Maya Miller asked her to return--this was maybe a month after she had gone back to Washington--to Nevada to help run the ranch and with other things--she had admired Susan's skills--Susan accepted. They spent one or two years, I'm not sure which, living on the ranch. Susan was working there.

One of the reasons that Susan felt that was good was that the children would be closer to their father in New Mexico, and they could get to see him. For a while, the daughter lived with her father and the son lived with Susan, and then there would be an exchange. I have to say for both Sam and Susan, they were extremely careful never to say anything about the other to the children that would in any way create problems, and the children remained in good relationship with both parents. Susan stayed on in Nevada, buying a house close to Washoe Lake.

Susan had not completed her college course, as I told you, at Oberlin, so as long as she was living in the Reno area, she began studying at the University of Nevada. Her big interest was art. Then she became interested in the field that's known as art therapy. So she majored both in art and in psychology. And as the years passed, she enrolled in an organization called Vermont College that offered summer courses in art therapy during the summers, and then during the winters she did practical application.

Eventually, she got her master's degree in art therapy. She has worked with disturbed children, and disturbed adults, for that matter, to learn to express themselves through art. She has recently been lecturing on art therapy at Sacramento State University. She has some assignments with institutions, such as hospitals or even jails. She has other assignments with private patients. And she's made a very nice life for herself out of art therapy.

Swent: Wonderful.

Strauss: Currently, she has a gentleman friend. She was fully divorced from Sam Orr. They live together in Sacramento, California. They're not married. She still owns her place in Reno on Washoe Lake, and rents it out to people. Her children, of course, are grown.

Granddaughter Katie Orr Thomas ##

Strauss: The older one, Katie, was with her father in Los Angeles and studying at Santa Monica Community College and earning some money by waitressing in various eateries when she met a young singer named Randy Thomas. They fell in love; they were married in early 1983. They've had two children as a result of that marriage, but I'm sorry to say that that marriage also did not last. About four years ago, Katie became very dissatisfied with living conditions in Los Angeles. They could only afford a very small apartment, and it was too confining for the children. She was worried about the crime and drug scene in Los Angeles, and visiting her mother in Sacramento, she saw a much more placid community.

So she moved to Sacramento, where she has a nice little house, and the two girls are going to school. I've encouraged Katie to finish her education, as well as to take care of her children, so for the time being, I am supporting them until the

children are old enough so that she can take full-time employment.

Just this spring, Katie, who like her mother is big on art, got a very interesting assignment. The Sacramento Airport chose her to select art work done by school children for display in the airport. The display is changed once a month, and Katie goes around to all the schools, not just in Sacramento but in the metropolitan area, talking to the art teachers, looking over the art work, picking out the things to display. It's part-time work, but it's something she really enjoys. It will be a great forerunner for her whether later on she works in an art gallery or an art museum.

Swent: It sounds as if she's made a nice life for herself.

Grandson David Orr

Strauss: The story of my grandson, David Orr, is a sad one. In many ways, of all my grandchildren, and I love them all, he was the one who was closest to me. For some reason that I will never understand, he underwent a change in character, he became very depressed. He was institutionalized on two or three occasions. Released from one institution in Los Angeles, he was sent to a halfway house where he could continue to go to college, but would be observed. But one morning when the bed check was made, he wasn't there. That was, I think, five years ago, and all efforts to trace what has happened to him have been fruitless. He completely disappeared. You can imagine what a burden it is for his mother and his sister, and for me.

Swent: Yes.

Strauss: He was a wonderful young man. We don't have a clue.

So that's the story of my family, except for my present wife.

Wife Janet McCloskey Robbins Strauss

Swent: That will be a happier note.

Strauss: Yes. Janet McCloskey I first met when she was twelve years old when I went to a summer camp for underprivileged children in New York State, outside Newburgh. Elaine was working there as a counselor, but she had Saturdays free, so on a Saturday I picked her up. We were to go canoeing, but before we set off, she introduced me to the lady who ran the camp, whose name was Mrs. Mark McCloskey, and I met also Mrs. McCloskey's husband, Mark, and I met Mrs. McCloskey's three daughters, Barbara, Janet, and Winnie. Barbara was thirteen, Janet was twelve, Winnie was ten. I have known those girls ever since.

Elaine was extremely fond of the McCloskey family, so that when our first son, Peter, was going to be born, we moved into Riverdale--I may have said that earlier.

Swent: I don't believe it's been on the tape. You told me.

Strauss: Yes. We moved into an apartment in Riverdale about three or four blocks from the house that the McCloskeys had. After the baby's birth, Elaine, under instructions from the doctor that he was to have plenty of fresh air, used to take the baby carriage over to the McCloskey home so he could breathe in the fresh air that was abundantly available in their garden, and she would sit inside talking with Mrs. McCloskey, who was her great friend. About three o'clock every afternoon, Janet and Winnie, who then were still in high school, would come home, entranced with the baby, never having seen one as close up as they saw young Peter, insisted on helping Elaine take care of him. As a consequence, Janet has known both my children ever since they were born.

Janet subsequently went to Swarthmore College, and on graduation in 1943, took a job in Washington with what was then called UNRRA, the United Nations Relief and Rehabilitation Administration.

In 1945, after V-E Day, Janet accepted a post of going across the ocean to Europe to serve in one of the UNRRA forward camps in Germany helping emigres. There were thousands and thousands of refugees. She had two sessions with UNRRA in Germany covering most of the following four years, and lived there under very primitive conditions in the war-shattered country.

When she returned to the United States, she had a brief period of executive training with R. H. Macy and Company, but decided that that was not for her. She then had a job with the Girl Scouts of America where she had an administrative post that involved a lot of travel.

After about two years of that, she resumed an acquaintance with a friend of her parents named Ira S. Robbins. Ira was younger than her parents, but quite a bit older than Janet. He had been divorced and was living a bachelor's life. They saw a lot of each other, fell in love, and in due course, were married. I'm not sure of the year; I think it might have been '52 or '53. Elaine and I were present at the wedding.

We saw Janet regularly at Christmas Eve parties at her parents' home. She and Ira came up and visited us in Lenox one year. Occasionally they came to our home on a visit. We remained very good friends.

Ira was a lawyer, was one of the first public housing commissioners appointed after New York City set up its Public Housing Commission, served on that for many years. After he retired, he returned to private practice.

As I said earlier, he was a good deal older than Janet. In 1978--he had not been well for years--he died, at a time when Janet herself was suffering from back problems.

In the following four years, Elaine and I made a point of seeing a good bit of Janet, because she was a widow and she needed friends. Janet was our guest the weekend that we had the book party, when Elaine's book was introduced to our friends.

At Elaine's death, she and her two sisters--her parents had died in the meanwhile--Barbara and Winnie as well as Janet came to the services for Elaine, returned to the house with us, were very supportive and helpful to me. I saw Janet two or three times after Elaine's death before she went to Europe for a month and visited her niece, who was then temporarily in England, and also to have a two-weeks trip in Wales. When she returned, we saw each other more frequently.

My son, who was quite free with gratuitous advice, put an arm around me one day, aware that I was seeing a number of ladies, and said, "Dad, if you're going to marry anyone, for goodness sake, marry Janet." I tease Janet now by telling her that I married her on my son's instructions.

At any rate, by September we had pretty well made up our minds that we would get married. My thought was that we would marry the following spring and take a trip to Europe as a consequence. However, my children had said to me very firmly that I was not to spend Christmas alone, that they proposed that they and their children, and Joanna as Peter's spouse, should all spend Christmas together in some warm place of my choice. I

don't like Florida, and a trip to California would have been excessive.

I chose New Orleans. First of all, apart from Peter, none of the others had ever been in New Orleans. I thought they would enjoy it at Christmastime. Also, it was about halfway between Nevada and New York, and so it would be easy for Susan and her children to come to New Orleans. Peter had a friend who was dean of the law school at Tulane. He called him up, got the name of a hotel in the French Quarter, and booked the suitable rooms for us: a single for me, a single for Susan, a double room for himself and Joanna, a double room for the two male grandchildren, and a double room for the two female grandchildren, although there was a great disparity in age between Katie Orr and Bethany Strauss. So we were all set for Christmas.

As Peter became aware that I was really seeing a lot of Janet, he said, "You ought to bring Janet to New Orleans."

I said, "Peter, we're not married."

"Oh," he said, "that doesn't make any difference."

I said, "Peter, it may not make any difference to you, but neither Janet nor I are willing to share quarters in the presence of our grandchildren. I think it would be a very bad example for them."

So that's how it came about that Janet and I were married not in the spring of '83, but in December of '82.

So the reservations were good for the twenty-third of December through the thirtieth, I think was the date, or the twenty-ninth, something like that. So we had to call up the hotel and change one of the singles to another double. [laughter] Which presented no problem.

Swent: So when were you married?

Strauss: We were married on the nineteenth of December. We were married at the home of our good friends and Lenox neighbors, Fred and Ruth Friendly. When Fred and Ruth were aware that I was thinking about marrying, they had said to me, "Who is it?" At that point, I hadn't told the children yet, so I told them I wouldn't tell them. They said, "Well, whoever it is, get married in our house."

They little realized how appropriate it was, because their home is also in Riverdale about five blocks from where Janet had

lived as a schoolgirl and about eight blocks from where I had lived with Elaine and Peter.

The ceremony, although I am Jewish, I don't have strong religious convictions; Janet does. She is an Episcopalian. She was very close to the rector of her church, Thomas Pike. We had lunch with Tom Pike one day during the fall. He indicated he was more than willing to perform the ceremony. I think my daughter-in-law, Joanna, would have liked to have had a rabbi also present to perform the ceremony jointly, but I did not share that feeling, so I pleased myself rather than her, and Tom Pike did a beautiful service.

Bethany Strauss, aged four, was the bride's flower girl, and Benjamin Strauss, aged twelve at the time, was my best man. We had just the immediate family present, both of Janet's sisters, of course, some cousins of mine. By then, both my sisters were dead. And Joanna's parents, because we were very good friends. And two or three couples who were Janet's close friends, plus her sisters and three or four of her nephews and nieces.

Swent: It sounds lovely.

Strauss: It was very nice. The Friendlys have a daughter-in-law who has a beautiful voice. She played the piano and sang.

And promptly, as soon as the service was over, my new sister-in-law, Winifred McCloskey Edelson, and my grandson, Benjamin Henry Strauss, darted out of the room to go to the television set in the adjoining room to watch the Washington Redskins, because they played football on Sundays, and Winnie Edelson cannot stand it if she can't watch it. In fact, she reproached Janet for having picked a day to be married when the Redskins were playing. [laughter] But it was a very happy occasion.

The thing I admire greatly in Janet is that she was willing to go on a honeymoon with all those in-laws! We rented a van so that we could all travel around New Orleans together. We really had a very good time.

Swent: It's obviously a very happy situation for both of you.

Strauss: So that's really the story to date.

Swent: Brings us up to the present. You're both still healthy and active and busy and happy.

Strauss: Yes. And as I have indicated in the discussions about some of my travels, Janet has been traveling with me. We've been to South Africa; I was invited there in '84 also to celebrate the fiftieth anniversary of Mintech. Mintech is the South African equivalent of the U.S. Bureau of Mines, and it was fifty years old. They had a big international meeting, and they wanted various people to give talks, so we went to that in South Africa.

We went to Hamburg. We went to Peru to inspect the operations of Southern Peru Copper. We went to Australia and Papua New Guinea to see Mount Isa and Ok Tedi. She's been in the Pacific Northwest with me to see the Coeur d'Alene and Troy mines. We went to eastern Nevada to see Freeport's mine now owned by Independence Mining Company, the Jerritt Canyon mine. We went up to Alaska, as I said earlier, for me to give the talk there.

Swent: Chile?

Strauss: We've been on two trips to Chile. The first was to take part in a joint conference of the Canadian and Chilean Mining Engineering Societies, where I presented a paper. So we've covered a lot of miles, plus the fact that we spend every Christmas in Bermuda. We've gone to most of the Mining Congress meetings. We've been to every one of the banquets of the National Mining Hall of Fame. So we're well traveled.

Swent: You certainly are.

Strauss: I think that's it.

Swent: I think we've covered everything just beautifully. I certainly thank you. It's been a real pleasure.

International Metal Tycoon Mauricio Hochschild

[Interview 5: August 27, 1994] ##

Swent: You had mentioned Mauricio Hochschild. Was there a connection with the other Hochschilds in the mining field?

Strauss: Yes. Mauricio was a cousin of the Hochschilds who were very prominent in the management of American Metal Company in the early part of the century. I believe the one who came over to the United States from Germany was named Berthold Hochschild. It was his two sons, Harold and Walter, who were very well known in

the mining and metals business for many years, right up until the 1960s.

Berthold Hochschild was sent to the United States from Frankfurt by Metallgesellschaft, the large German mining and metals trading organization. Simultaneously, Metallgesellschaft had also opened an office in London under the name of British Metal Corporation, and the ties between the Frankfurt office and the offices in London and New York were extremely close prior to World War I. The war, of course, changed all that, and it was necessary for the ties to be broken. The alien property custodians in both countries insisted that these corporations be divested of their German corporate ownership.

However, following the peace in 1918, business connections did resume. As an example, I had mentioned the Norddeutsche copper refinery in Germany. The ownership of that refinery was for a long time shared between Metallgesellschaft and either British Metal Corporation or an affiliated company it had formed called Amalgamated Metal Corporation. There were, I'm sure, many tax or other corporate reasons for having this multitude of companies, but the ties in terms of doing business together were restored. However, Metallgesellschaft as a German corporation, so far as I know, had no further stock investment in either American Metal Company or British Metal.

Swent: Were there several family connections, though?

Strauss: There were some family connections, I'm sure, and I don't know enough to give you details. But the management of American Metal Company for many years was in the hands of people who had emigrated to the United States from Germany, including Ludwig Vogelstein, and subsequently his nephew, Hans Vogelstein. There was Dr. Otto Sussman, who was president of American Metal for years, and then there were the Loeb brothers. There was Carl and Julius Loeb.

The Loebs left American Metal management during the Depression of the thirties. Carl Loeb then went into the securities business and founded the very successful stock brokerage firm of Loeb, Rhodes & Company, which has since been absorbed in Wall Street's multitudinous amalgamations and mergers. But Carl Loeb's son, John Loeb, was considered one of the leaders of Wall Street during the forties, fifties, and sixties.

So the influence of the original German connection persisted in the American Metal Company for many years. It began to change in the fifties when American Metal was merged with the Climax

Molybdenum Company. American Metal had played a role originally in the development of the Climax mine, but it was for many years run by a separate corporation, Climax Molybdenum Corporation, in which American Metal had a stock interest but in which there was also broad public participation. The exact date of the merger between American Metal and Climax I don't remember, but after that merger, the name of the company was changed from American Metal to Amax.

Swent: Were any of these people connected with the Guggenheims?

Strauss: No. There was no connection whatever. The Guggenheims were not of German origin; they were Swiss. Meyer Guggenheim, who was the progenitor, let us say, of the whole Guggenheim clan, was a lace merchant from Switzerland who settled in Philadelphia, and had had no previous experience in the metals business until he was persuaded by someone to make an investment in silver mines in Leadville, Colorado.

Swent: But these others had been in metal trading maybe for long--centuries?

Strauss: For a long time. Well, Metallgesellschaft goes back to the early part of the nineteenth century, and I think many of them had been involved in metal trading.

But the most colorful of them all was certainly Mauricio Hochschild, and since you are interested in anecdotes, let me tell you one of the really amusing anecdotes about Mauricio Hochschild.

Swent: Did you know him well?

Strauss: I knew him very well. I had met him as a child, because he was a friend of my father's when he first came to South America.

Born in Germany, educated at Freiberg, the very well known mining school in Germany, Mauricio first went to Russia and then later to western Australia, but in 1911, the year I was born, he came to South America, and thereafter, that was the center of his activities. In due course, he established a firm foothold not only as a metal trader but as an operator of tin mines in Bolivia, and from there he branched out until he had mining operations in Brazil, Argentina, Peru, and Chile, as well as in Bolivia. He had trading companies also in Colombia and possibly elsewhere in Latin America. He was a very impressive gentleman.

With the rise of Hitler in Germany, Mauricio Hochschild, who was not a practicing Jew, but nevertheless of Jewish descent, was

one of the leaders in rescuing Jews from the German dominion. And more than that, he resolved not to do business with Germany. He used to travel frequently to Europe, nevertheless, to participate in discussions with people in the metals business, since he sold ores and concentrates, plus tin metal, in Europe.

In June of 1940, when the Germans broke through the Maginot Line and were threatening to take over Paris, Mauricio Hochschild was actually staying at the Meurice Hotel--no connection--in Paris, where he was a frequent visitor, well known to the staff, extremely generous in terms of gratuities. When it appeared that Paris was about to fall, Mauricio recognized that if he was still there when the Germans entered the city, he would face the probability of being executed, because of not only the fact that he was Jewish, but that he had refused to do business with the Germans.

So he went to the concierge at the hotel and said that he understood that that afternoon, there was an airplane flight out of Paris to London, and he wanted a seat on that plane if it was at all possible, no matter at what the cost. The concierge, who was very friendly toward Mauricio, said, "Come back in an hour and I'll let you know."

When he returned, the concierge said, "I managed to get you a seat," and although Hochschild had been prepared to pay hundreds or thousands of dollars for a seat, the extra cost turned out to be ten dollars over the nominal price.

That afternoon, he went out to the airport, Le Bourget, to get on his plane. The departure was being delayed because in all the confusion, some cargo was being loaded into the cargo department. Being of a very curious frame of mind, and assuming that these wooden boxes contained the gold reserves of the Bank of France, Mauricio asked one of the workmen what was in the boxes.

You will be astonished at the reply. Bear in mind that this is June.

The cargo was wild strawberries, consigned to the Claridge Hotel in London. Undoubtedly, the Claridge Hotel had a standing order with some fruit dealer for shipment of wild strawberries every June, which are a delicacy, and people pay great prices to enjoy their wild strawberries. So the order had probably been repeated at the end of the previous June, when the world was at peace, and the routines had gone forward. Nobody had countermanded it.

So, on the last commercial flight out of Paris to London, on the fateful day before the Germans occupied the city, Mauricio Hochschild, the international metal trader, successfully got out of Paris, sitting in a plane loaded with wild strawberries.

Swent: Oh, my word. [laughter] Vive la France.

Strauss: Vive the Claridge Hotel!

Swent: Yes. He told that story?

Strauss: Oh, yes, he told me that story, and he told me a lot of others that were very amusing. He was a great raconteur. He was extremely fond of my wife, Elaine, and he was very concerned about her limited health.

Swent: What happened to him?

Strauss: He died in the late sixties, early seventies.

Swent: A peaceful death?

Strauss: A peaceful death in his eightieth or eighty-third year.

Swent: Where?

Strauss: In Paris, as it turned out, although he spent most of his time in South America or the United States. After the war, with all the complications of exchange controls and taxes, he had formed a holding company based in the Bahamas in order to avoid a lot of the complications that existed. He had companies in each of the countries in which he operated, and most of them maintained their accounts in pounds sterling, but the shares were quoted in terms of par in Swiss francs, and most of the products were sold in dollars. He was an expert at dealing with all these problems.

Swent: Did he have heirs who took over the business?

Strauss: He had a son.

But what I wanted to tell you to show you the kind of generous and compassionate man he was as an individual, although as a metals trader he was merciless in dealing with the people with whom he dealt: he had an apartment at Cable Beach in Nassau in the Bahamas which stood empty most of the year. He used it when they had to have their semiannual board meetings in the Bahamas in order to comply with Bahamian regulations.

He said to me one day, "You know, your wife would really be very comfortable and happy in the apartment that I have in Cable Beach, and it's at your disposal whenever you and she would like to go there."

I said, "Oh, Mauricio, that's a very generous offer, but the fact is that Elaine sleeps only in a hospital bed, and she's not comfortable in an ordinary bed, and it's very hard to take care of her except in a hospital bed."

He said, "Well, how do I go about getting a hospital bed?"

I said, "Well, I'm not familiar with Nassau, but perhaps if one of your people would make inquiries at the hospital, they might have a spare bed that they could rent."

A few weeks later, he said to me, "We got in touch with the hospital. There were tears in their eyes when they described how desperately short they are of hospital beds. So I agreed that I would give them a hospital bed, but I thought I would buy it in the United States, ship it down and let Elaine use it first before turning it over to the hospital." So in fact, one of the --I guess the only--vacations that Elaine had outside the United States after her illness were in Nassau. On one occasion we spent two weeks in the apartment that he had fully staffed.

This was the kind of thing that he did. He established what he called the University in Exile in connection with the New School for Social Research in New York, and arranged to have numbers of German and French academics who fled from Hitler brought to the United States and teach at the university. So he was a quite remarkable man.

Swent: That's wonderful. Were any of these people related--were the Vogelsteins, for instance, and the Hochschilds, you mentioned--

Strauss: The Loebs.

Swent: The Loebs and the Vogelsteins were related?

Strauss: I'm not sure. There may have been some intermarriage between them. I have a sense, and I can't offer this as fact, but I have a sense that in fact, the Hochschilds in the American Metal and the Loebs did not get along all that well. I think there was some dissension about the Climax mine at one point. And I believe when the Loebs left American Metal management in 1929-1930, I'm not sure of the date, they may well have been forced out by the Hochschilds.

Swent: Hochschilds or Vogelsteins?

Strauss: The Hochschilds. A Vogelstein was the president at the time, but the Hochschilds were the big shareholders.

Swent: They had interests in it.

Strauss: As I say, I can't assert that this is so; it's just an impression that I have.

Swent: You might want to mention, too, there were a couple of things that we had talked about that you wanted to say about Mr. Haines.

Strauss: Oh, yes. I mentioned that in the postwar period, Asarco's representative in Germany was Hugo Haines.

Swent: He stayed in Germany all through the war?

Strauss: No, he was actually in Brussels when the war broke out. He had been working with Roger Hecht in Brussels, and when the Germans invaded Belgium and Holland, Roger Hecht, his wife, and his small children were able to escape. They made their way first to France, and then under great difficulty to Portugal, and eventually sailed to the United States, where--

Swent: They were Jewish?

Strauss: They were Jewish. --where Roger became affiliated with the U.S. office of Metal Traders, and worked there during the war.

However, Roger's brother Guido and his mother were still in Brussels when the Germans came through. Roger told me in the postwar era that Hugo Haines, who had been associated with him and who had kept the office open for a time, played a key role in saving his mother and his brother's life. In spite of the fact that he did so at great risk, the kind of thing that was described so movingly in *The Diary of Anne Frank*. It was a similar situation. So we had no problem in Asarco in being represented by Mr. Haines. There was no hint of his ever having any kind of Nazi connections.

Swent: The people that Hochschild helped to get out: did he get them to Latin America or to North America?

Strauss: Both. Most, because of the quotas in effect, most of the Jewish emigrants he helped settled in Bolivia, Peru, Chile. Many of them went to work in his organizations, and in due course, they rose to be the managers of his organization. He had been married to two different ladies on three occasions. That is to say, he

married one lady twice. His second wife, the one that I knew, was of Belgian origin, and a charming woman. For a while, they lived on Long Island, or had a house on Long Island, and she lived there more or less year-round, but of course, he was constantly traveling, and would come home.

I remember very vividly the occasion of his seventy-fifth birthday party, because his wife arranged to use the ballroom of the Ritz-Carlton Hotel. It was the last social function held at the Ritz-Carlton Hotel, which was then on 43rd or 44th Street, before it was torn down. The group that were there were primarily Dr. Hochschild's friends in the mining and metals industry. There may have been 100 people at this black-tie affair with orchestra and dancing and professional entertainment. Elaine and I went down and stayed overnight at the hotel, because it would have been too late for her to go home. And it was a fine occasion. He was in great spirits.

Mrs. Hochschild died shortly thereafter. He gave up the house on Long Island, but maintained a suite in the Ambassador Hotel on Park Avenue, which is, I think, where the Seagrams Building is now. We would come in to have dinner with him every so often.

He had taken a great interest in a fellow named Dr. Ross, who was a magician, and every time we came to have dinner with him, there would be Dr. Ross taking cards out of our sleeves or confusing us with all kinds of magic tricks. [laughing] I don't think that Dr. Hochschild really was so interested in magic, except that he felt sorry for this gentleman, and he would take him on as an evening's entertainer for a group of eight or ten people. That would be all there would be there, and we would be exposed to the kind of performance that usually you'd see in the theater with hundreds of people watching.

Swent: His business still exists?

Strauss: His business still exists, but following his death, he left his estate basically to his associates. His only son, who lived in London, had been in the business for a short time but was not very adept at it, and managed to annoy or harass many of the other people in the business to the extent that Dr. Hochschild recognized that it wasn't working. So he suggested to Gerald--that's the son's name--that he find something else to do, and paid him several million dollars as a sort of a severance pay or an advance on his inheritance.

So following his death, when the will was read and it was discovered that he had left only a fraction to his estate to

Gerald, Gerald decided to challenge it in the court on the grounds that he had died in France, and that French law should prevail, and that under French law you cannot disinherit your children. They're entitled to, I don't know, a third of the estate or something like that.

I offered my good services, since I had no interest in the matter one way or the other, to try to intervene between Gerald and the people who were really running the business. I had a most unsatisfactory talk with him. He was not interested in any kind of compromise. So I haven't seen him since that one meeting that I had with him.

But eventually, the business continued with the partner who was in charge of the Buenos Aires office, I think, as sort of pro chairman for a period of time, and then when Anglo-American decided to become interested in the Western Hemisphere, they made an offer for and actually took over much of the business. Not all of it. I think a nephew still runs the Peruvian end of the business.

Swent: It was called Hochschild?

Strauss: Yes. It had various names, various names. The Brazilian office, which represented Asarco for our sales of refined metals in Brazil, was run by a very nice gentleman named Rolf Weinberg. I think perhaps the name was Brasimet. But it was part of this Hochschild group, and the umbrella Bahamian corporation still existed. It was called South American Mines Consolidated, or some such name. But it was that corporation that was bought by Anglo-American, except that apparently some deal was worked out, I'm not familiar with the details, under which the Peruvian business continued as an independent under the administration of Dr. Hochschild's nephew, Luis Hochschild, or, as he was called by his friends, Lucho.

I haven't seen Lucho in the last few years, but the last I knew, he was doing quite well. He's the one that worked out the treatment of the tailings as they came down the stream from Toquepala. You'll remember my talking about that.

Swent: Yes.

Strauss: So you can see how everything gets intermeshed and interwoven in the industry.

Swent: Yes. It's a small network.

Strauss: But I greatly enjoyed my contacts with Dr. Hochschild, even though, as I said, when I left Washington and he wanted me to join his organization, I felt I would be happier at Asarco. But we often traveled together. I would see him when I was in Paris if he happened to be there, and we met frequently in both New York and London.

##

Strauss: Recently I heard from a former employee of his, Helmut Waszkis, who wrote to say that he was going to undertake the writing of a biography of Mauricio Hochschild. He asked if he could meet me, and I of course replied I'd be glad to meet him. When that's going to happen and whether it will materialize, who knows. But his life was a fascinating one. He was a truly international person. He eventually became a citizen of Argentina, yet he had his corporations scattered all over South America. He was much of the time in Europe or the United States, and occasionally in Japan.

I sometimes have said, and often to his face, that he was the Basil Zaharoff of the mining business. Do you know who Basil Zaharoff was?

Swent: No, I don't think I do.

Strauss: Basil Zaharoff was a mysterious businessman who reportedly made a fortune during World War I dealing in munitions. Now, Mauricio never dealt in munitions, but his methods of doing business were in some ways somewhat similar to Basil Zaharoff's, having a lot of different corporate names under which to operate. I'm not suggesting that Don Mauricio did anything that was illegal, but he took advantage of every available tax loophole or currency regulation he could.

At one time in his life, he was in Bolivia. The Bolivian government accused him of traitorous behavior with respect to currency dealings. He was imprisoned in La Paz, and for a while, it was thought that he might well be executed. But he managed to escape. His associates found ways of getting him released. I'm not sure that he ever went back to Bolivia after that.

Yet he had some wonderful, fantastic ideas about Bolivia. You may know, there's a lake called Lake Titicaca on the border between Peru and Bolivia, and it's the largest lake at that elevation, 12,000 feet or something. Mauricio Hochschild was fascinated with the possibility of generating power by building dams and releasing some of the water of Titicaca to generate electric power. He spent a lot of time on that project.

One of the causes to which he gave a lot of money and a great deal of time: after the European Economic Union was set up, he proposed that Latin America do the same thing. He engaged a former president of Chile, paid him a salary, and had him travel around to work on this idea. So he was a true visionary, a man of great strength, physical and mental.

Swent: Apropos of the fact that I recently read a very interesting book about the Mafia, I was just wondering, was there ever any entrance of the Mafia into the international metal business that you know of?

Strauss: Not that I know of. I'm not aware of anything. My guess is that if they had, it probably would have been in scrap trading. But I'm not aware of it with regard to primary metal production.

Swent: I'm sure you wouldn't have been approached directly yourself!

Strauss: No, no.

Swent: But I just wondered if there were ever rumors of Mafia pressure involvement.

Strauss: After the price of silver rose above the melting point, the Treasury--

Swent: That's the point at which melting the coins down is more--?

Strauss: Yes, the face value of the coin was less than the value of the contained silver. There was for a time a Treasury regulation making it illegal to melt coins. This remained on the books for maybe three or four years, and there were rumors of possible criminal elements that were carrying on illegal melting. The Canadians, because they also had silver coins, they had adopted similar measures. It was illegal to melt down U.S. coins in the United States, but it wasn't illegal to melt down Canadian coins in the U.S., nor was it illegal to melt down U.S. coins in Canada. There were various rumors of groups that were carrying coins across the border, melting Canadian coins in this country, melting U.S. coins in Canada. It may very well have happened, but that's as close as I--

Swent: But not on a very large scale?

Strauss: Well, there was a lot of money. Once silver got to three or four dollars an ounce, a coin was worth two or more times as much dead as alive. And of course, one of the interesting things about the melting of coins is, the more coins get melted down, the more the numismatic value of the surviving coin becomes. I still have the

bulk of the coins that I put aside years ago, and every now and then, I look at them and wonder what I ought to do with them.

Swent: Of course, gold smuggling has been an industry of a number of countries.

Strauss: Right. And probably there were some illicit dealings in gold in the days when it was illegal for private citizens to hold gold in the United States. There may well have been. But in today's freer markets, there wouldn't be any point in smuggling. You don't need to.

Transcribed and Final Typed by Shannon Page

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The Way It Was

By Simon D. Strauss

The author, Simon D. Strauss, is a geologist and Governor of the National Mining Hall of Fame and Museum located in Leadville, Colorado. The following is a chapter from his book Miner Incidents.

My First Memory

It is dusk on a desolate landscape. The carriage in which we have been riding comes to a halt. Our coachman unhitches the horses and throws saddles over their backs. My father leaps onto one horse; my mother handicapped by long skirts, mounts the second more slowly, helped by the coachman. She sits sidesaddle. The coachman lifts me out of the carriage and places me in front of my father. Then he reaches for my sister Ruth, 14 months older than I, and puts her with my mother. Our parents hold us with their left arms, keeping the reins in their right hand.

Some words are exchanged with the coachman and governess who remain with the coach. And then we are off -- the horses plodding slowly but steadily through the soft desert sands. After a time, indeterminate to my infant mind, we arrive at an adobe and brick house standing on a slight rise, amid rocks and sand. The only vegetation is a lone tree to one side of a stone-paved patio.

We dismount. Inside the house, lit feebly by oil lamps, we are offered cups of hot, sweet tea before we are taken to a bedroom which my sister and I are to share. My father instructs a man on the premises take the horses back to the carriage.

Now, more than 70 years later, I like to think of this as true recollection. But I am able to reconstruct a more complete account out of the fog of the past based on conversations with my parents and from an examination of faded photographs. An engineer, father was meticulous about noting places and dates on the pictures he snapped.

The time was September, 1914, three years and two months after my birth in Lima, Peru, one month after the outbreak of World War I. The place is the tiny hamlet of Carrizal Alto in the vast expanse of the Atacama Desert of northern Chile -- reputedly the driest place on earth.

Chile then held a world monopoly in the production of nitrate of soda -- essential for both fertilizer and explosives. The process for making synthetic nitrogen had only recently

THE author and his sister on horseback with their mother near mine shaft, 1914.

ABOVE: This is the Victoria in which we rode after taking the train. That is probably my father standing behind the piles of luggage. My mother was big on hats. BELOW: Our house in Carrizal Alto, Chile. My mother kept the fig tree alive with our old bath water.

been developed in Germany. The only large deposits of nitrate were in Chile. Since Great Britain and its Allies were unable to produce synthetic nitrogen, a protracted war would mean a soaring demand. Recognizing this, there was a scramble to develop deposits in Chile.

My father, a Columbia graduate in mining engineering, had established a consulting practice in Lima where he had been engaged to examine a deposit at Carrizal Alto. His investigation would take several months. Rather than be separated from his wife and two small children, he made arrangements to take them and their German *fraulein*/ governess with him to live in a ramshackle house in the mining village. Our trip took us by coastal steamer from Lima's port of Callao to a port in northern Chile (either Antofogasta or Chañaral) and then by rail to the interior and finally by open carriage to Carrizal Alto.

One of the faded photos shows us seated in the heavily laden coach, barely discernible amidst mountains of baggage required by my mother's Edwardian standards of dress which called for frequent changes of clothing that covered us from head to toe. And, of course, there were the professional tools of my father's work.

Traversing the roadless waste of the desert must have been heavy work for the two horses. With night approaching, my parents apparently decided it would be best to unhitch the horses and taking the youngsters, proceed by horseback the last few kilometers, leaving behind the *fraulein*, the coachman, the carriage and the luggage for later retrieval.

Mother, vaguely aware of nitrate's explosive properties, expected me to explode.

The family remained in Carrizal Alto for nearly three months. Contact with the world outside was severely limited. My sister Ruth and I, thrown on our own resources, developed our games in the midst of the desert. In later years, my mother would frequently recall these activities. I have a particularly vivid impression of the day that Ruth threw a tea party. Ruth was a most decisive, impulsive and authoritative older sister. So, of course, she was the hostess and I the compliant guest at this affair. When Ruth made decisions, I meekly followed suit. In one of the basement rooms, she had located an interesting glass jar and proclaimed the contents preserved pears. She poured some of these into a saucer for me to sample. It tasted awful. I spat it out and ran screaming

LIMA-Oroya Railroad crossing the Rimac River.

to my mother.

The "pears" turned out to be one of my father's rock samples, in a mildly acidic solution. Mother, vaguely aware of nitrate's explosive properties, expected me to explode. I retched and vomited a lot but survived.

Getting water was a major problem in Carrizal Alto. Once a week, a tank car arrived at the nearest railroad station where its contents were pumped into a wagon and transported to the village. Supplies were carefully rationed out to each household. Once the weekly quota was doled out to us, mother would bathe Ruth and me in the hogshead that served as a bathtub. After we had been dried, she would immerse herself in the same sudsy water, followed by the *fraulein* and last of all by father. When we had finished, the contents were carried outside and carefully poured around the lonely tree outside our house. Supposedly a fig tree, perhaps it one day bore cakes of soap for fruit.

In the midst of the desert, Ruth and I tried our hand at boating. A photograph in the family album shows the two of us seated in a wooden crate wielding brooms for oars to row us across the flagged stone patio. Probably this was after the remarkable rainstorm that occurred during our stay -- the first precipitation, my mother said, in more than 20 years.

The effect was spectacular. Over the years, seeds blown across the Andes from Argentina lay fallow, spread over the desert and perfectly

Supposedly a fig tree, perhaps it one day bore cakes of soap.

preserved in the dry climate. With the rain, they germinated. Within three weeks, my mother remembered, plants had grown so high that when Ruth and I went outside to play, she had trouble seeing us. If true, it was a remarkable demonstration of the nutrient power of nitrate.

That my father's profession made a strong impression on my three year old mind is evident from another old photo. I am standing on the stone patio in pajamas. On my head is the broad-brimmed, stiff engineer's hat my father invariably wore on his exploration trips. I am looking down with an

BELOW: My parents camping out in a cave en route to a copper prospect. OPPOSITE ABOVE: Chorrillos, residential district and summer resort of Lima. OPPOSITE BELOW: View of Lima from Cerro San Cristobal. Note Rimac River and Acho Bullring.

MOROCOCHA, Peru: Loading llamas with our packs.

enigmatic smile at the object in my right hand -- a miner's pick. Behind me is an unpainted wooden fence; above me the branches of the lone fig tree.

As I grew older, I developed other interests and ambitions. For a time, living in the busy port of Valparaiso and bewitched by reading Southey's *Life of Nelson*, I decided to become a sailor, rising perhaps to the rank of admiral. Later still, I decided I would be a journalist and eventually the editor of *The New York Times*. But in the long run, the omen of the picture came to pass. Though lacking a formal engineering education, it was in the mining industry that I earned my livelihood.

What became of my father's examination of the nitrate deposits in Carrizal Alto I do not know, but during the war, he focused his attention primarily on nitrate and copper. Under the circumstances, he decided to move his office from Lima, his headquarters since 1904, to Valparaiso, the chief port and, at that time, the commercial center of Chile. Thus, before my fourth birthday, I became a resident of that lovely country -- strung out like a snake between the mountains and the sea for 3,000 miles along the west coast of South America.

South America seemed a remote and improbable place for a young American couple with Jewish antecedents to settle. My father, Lester W. Strauss, had been born in New York's lower East Side. My mother, Bertha Miller, was born in the small town of Plattsburgh, New York, on beautiful Lake Champlain.

For young men of my father's background, a career as a merchant, lawyer, doctor or banker would have been more traditional. Instead, he wound up poking around for mineral deposits in the desert and mountainous wilderness of distant countries with strange languages and customs.

Bertha urged him to accept, promising marriage on return. It was an era of long engagements.

As for mother, she had a brief career as an elementary school teacher in upstate New York. It would have been normal to marry one of the boys next door and settle down to child rearing in a comfortable and familiar environment. But the fates would intervene.

While a student at Columbia School of Mines shortly before the turn of the century, Lester underwent some minor surgery. In the hospital, he shared a semi-private room with Isaac "Ike" Miller. Because Ike had just arrived in New York to seek his fortune in the clothing trade, he had few visitors. But my paternal grandmother came daily, bringing with her copious supplies of chicken soup, calf's foot jelly and other

LEFT: My parents liked to share the adventure of new places and people. BELOW: Clearing a rockslide on the Lima-Oroyas central railway.

time-tested comestibles which my father shared with Ike. The two patients became fast friends, and on their release, Lester readily accepted Ike's invitation to hasten his recuperation by taking in the bracing air of the Champlain Valley. There he met Ike's sister Bertha. The attraction was immediate and mutual.

Later at the Columbia School of Mines, Lester persuaded his faculty advisor to allow him to spend his final year of field work examining iron ore deposits in the Adirondacks -- a few miles southwest of Plattsburgh. During this second visit, the romance blossomed, but when they became engaged, I do not know.

After graduation, Lester took a job in Dahlonega, Georgia, at a gold mine. Contrary to the widespread belief that gold mining began in the United States with the famous discovery at Sutter's Mill in California in 1848, gold mining had been common practice in the southern Appalachian region of Georgia, the Carolinas and Virginia since the early 19th century. From Dahlonega, the young graduate went on to Flat River, Missouri, to work in the assay offices of a large lead mining company. An active exchange of letters took place between Flat River and Plattsburgh. Ike, now a traveling salesman dealing in men's clothing, found time to spend a weekend in Flat River, following business calls in St. Louis. Sixty years later, he told me what a wild and woolly town Flat River was in the early 1900s. He claimed all the men walked around with handguns stuck between their shirt and trousers.

MY mother, sister, me and our German nanny next to a Chilean train in 1914. We're on our way to Carrizal Alto in the Atacama Desert.

An accident ended Lester's career in Flat River. An explosion of molten lead caused minor injuries to his eyes. After this he shunned office and laboratory work, preferring to work outdoors. Returned to New York, he applied for assignments as an exploration engineer, but when an offer came through to work in the distant land of Peru, he was torn -- it would mean too many miles between him and a certain girl with auburn hair. Bertha, however, urged him to accept, promising marriage on return. It was an era of long engagements.

So, in 1904, Lester booked a ship for the three-week trip to Peru -- sailing to Panama, traveling by rail across the isthmus and then by ship down the west coast to Callao, Lima's port city. Lacking airmail or long-distance telephones, communication between the couple was infrequent and often subject to tedious delays. If Lester were to urgently inquire of Bertha whether she loved him still, her answer might take six weeks or more. Yet, faithful they both remained.

When Lester's first Peru assignment came to an end, he launched out on his own. There were excellent opportunities in independent consulting. Mining companies and investment bankers based in the US or Europe could, of course, send out their own engineers to check out South American mineral deposits, but this meant paying considerable sums for idle time spent on ship.

Lester received many offers, and this delayed his return to the States. Bertha waited patiently in Plattsburgh.

But then something happened. Roman Catholicism was Peru's state religion in the years following independence from Spain in 1824. This meant only marriages performed by Catholic priests were recognized. But in 1906, the Peruvian Parliament established the legality of civil marriages.

My father immediately sent a cable to his beloved. One can imagine the excitement this caused in sleepy Plattsburgh.

Bertha did not hesitate, despite circumstances at home. Her father, David Miller, had died in the 1890s, leaving his widow with six children. Bertha's five brothers were all younger than she, and only two were gainfully employed at that time. Money was tight. Bertha would have to make the trip alone -- a most unusual undertaking for a well brought up young woman in 1906.

So even before my birth in 1911, I had traveled well over 10,000 miles.

Her trousseau packed in an enormous steamer trunk and tickets in hand, Bertha set off for Peru. Apart from Lester Strauss, she knew no one in that mysterious, far off land where she could not speak the language. It would be her first experience on an ocean steamer.

In Colón, the port on Panama's north coast, work was underway on the Panama Canal. From Colón, she took the train to Panama City. There she stayed a week in a wretched hotel, waiting for a southbound ship to Callao. Finally, after 27 days, she reached Callao on March 26th. And there at dockside stood Lester, eager and beaming.

The following day, March 27th, in a ceremony jointly performed by the Mayor of Lima and the U.S. Consul General, Bertha Miller and Lester Strauss became husband and wife. It was the first civil ceremony performed in Peru's 82 years as a republic.

Thirty years later in March 1941, I was in Washington, DC. I had just taken a position working for the national defense effort. France had fallen, and we realized the United States would soon be involved in the war. A meeting had been called to discuss the construction of a tin smelter in Texas City, Texas. The head of the tin/lead branch of the Office of Production Management was there. His name was Erwin Vogelsang. When we were introduced, he looked at me carefully.

"Are you Lester Strauss' son?" he asked. I said I was. "Well," said he, "I was a witness at your parent's wedding in Lima in 1906."

My mother died in 1949. Going through her personal effects, Ruth found a picture neither of us had ever seen. It was the wedding party -- just five women and six men. Dressed in formal clothes (the men wore white tie), all were seated around a flower-strewn table at the Gran Hotel Mauri, then Lima's best. Obviously, these had to be business acquaintances of my father. He had not been in Peru long enough to form close personal ties, and the nearest relatives were thousands of miles away. Partially obscured by my mother's hat, topped by a huge feather, stood a man clearly recognizable as the young Erwin Vogelsang. A native of Germany and a naturalized United States citizen, he had been sent to Peru as the commercial representative of a large New York metal firm.

Despite the conventional wedding, my parents were true pioneers in spirit. They adapted readily to the culture they found in Peru and learned to speak Spanish quickly and well.

LAKE Huacracocha, Morococha, Peru. Note the Churruca Mine at lower left.

Though father never lost his nasal New York accent, mother spoke a Spanish both grammatically correct and pronounced with a true Castilian lilt.

My parents loved life out-of-doors, spending long hours in the saddle riding horseback through the Andean wilderness. They put up cheerfully with the crudest accommodations in mining camps. For my father, the lack of creature comforts went with his choice of careers. For my mother, making do with little was a challenge. Nothing compelled her to go with father into the mountain fastnesses. She chose to. She wanted to be with him, took an interest in his profession, and liked to share in the adventure of strange places and peoples.

On one such trip, she went along despite doubts expressed by father's associate. A Swedish engineer, he could not understand why a young bride of a few months would voluntarily undertake a trip involving back breaking days of horseback riding. What made her give up the luxuries of Lima where she could spend the day reading novels, eating chocolates, being waited on hand and foot by Indian domestics? "She wants the experience," my father explained.

As mother told the story, it was their second day on the trail. They were riding single file along a path no more than a meter wide etched into the side of the mountain. On the left, it dropped off thousands of feet to the valley below. On the right rose a sheer rock face up to the mountain peak.

Suddenly, they heard piercing screams, followed by a sharp knocking sound. More screams. More knocks. Rounding a bend in the trail, they encountered an Indian woman lying in the trail. She was giving birth and screaming. The knocking sound came from a man who, lacking a knife, was trying to sever the umbilical cord by pounding it between two rocks.

The Swedish engineer, first in line, turned around. Speaking of my mother, he said to my father, "I think she gets plenty of experience."

Mother made several more trips with father into the isolated mining regions. But then came the children. In May, 1910, Ruth arrived. Since she was the first grandchild, mother decided to take this remarkable infant back to the States to be admired by the relatives. As the Canal was not yet in operation, this called for a steamship ride, transit across the Panama isthmus by train and another long ocean trip. Undaunted, she took a Peruvian nurse with her, leaving father to stay behind to look at more mines.

Arriving in New York, mother felt unwell. She consulted a doctor who explained a second child was on the way. The families endeavored to persuade her to remain, arguing that New York's medical establishment was superior to Lima's. Mother would hear none of this. She wanted to be near Lester.

So, even before my birth in July, 1911, I had traveled well over 10,000 miles. And, as fate would have it, when I did arrive, father was not in Lima, but looking at a tin deposit near Oruro, Bolivia. ■

Appendix B

Mining History International Meeting
Golden, CO June 6-10, 1994

GRAPHITE, MICA AND THE BLOCKADE OF MADAGASCAR DURING WORLD WAR II

Among sea-faring vessels Lone Star and West Hardaway are hardly household names like Queen Elizabeth or Titanic.Yet these two unknown freighters played a vital role in a bizarre episode of the struggle to assure adequate supplies of strategic and critical minerals for Allied Forces during World War II.

It all began when Germany over-ran France in June, 1940. The administrators of the huge island of Madagascar, a French colony lying east of the African coast in the Indian Ocean, chose to remain loyal to the Petain Administration in Vichy rather than to pledge allegiance to the Free French forces under General Charles de Gaulle.

This made the British government very uneasy. It feared that the Petain regime might cave in to pressure from the German Nazi leaders to use Madagascan ports as supply and fuel bases for German submarines in the Indian Ocean. This, in turn, would put in jeopardy British imports of raw materials from Australia, India and South Africa - as well as men and munitions for the very active front in Egypt.

Therefore, even though they could ill spare the required naval forces, the British put in place a naval blockade of all Madagascan ports plus its hundreds of miles of coastline. No vessels were permitted to sail into or out of those ports, with the single exception of one modest freighter that linked Madagascar to what

was then called French Indo-China. That country, now the three nations of Vietnam, Laos and Cambodia, had no surplus of fuels and no munitions industries. Imports into Madagascar from Indo China would not assist in provisioning Nazi submarines.

The blockade proved extremely effective. Not only were imports denied, but Madagascan exports came to a full stop. This meant that two unique Madagascan mineral products were no longer available in overseas markets - flake graphite and phlogopite mica. Madagascan graphite was the preferred material for crucible linings for the iron and steel industry. Phlogopite mica sheets were considered essential for electronics and electrical applications because of their electrical properties and high heat stability.

By early 1941 the steel and electrical equipment industries were pleading with the Roosevelt administration in the United States to arrange access to Madagascan graphite and mica. British manufacturers made similar requests to their government. When I joined the staff of the Metals Reserve Co., a government corporation set up the previous year to procure strategic minerals, negotiations were underway with Vichy's representatives in Washington as well as with the British Embassy . In April a tri-partite agreement was reached. The British government would allow an American-flag vessel through the blockade to load several thousand tons each of graphite and mica. When that vessel had departed Madagascar, a shipment of carefully screened goods would be allowed through the blockade for Madagascan destinations. The French pledged that these imports would be used locally and none would be made available to any German submarines that might elude the British blockade.

The ship selected to load the graphite and mica was the Lone Star

based in Houston. It reached the port of Tamatave, in Madagascar, in late May, 1941. This was the first U.S. flag vessel to arrive at a Madagascan port in more than a year.

Local French officials were delighted. To mark the occasion, the Governor General advised the American consul in Tananarive, the Madagascan capital, that he would like to tender an official reception for the Lone Star's captain at his official residence. The consul, whose name was Carter, one of only three African-Americans then in U.S. foreign service, urged the captain to make the 90-mile trip from Tamatave to Tananarive. The captain, never having previously been involved in a diplomatic function, was pleased to accept.

Some two years later on a visit to Washington, consul Carter provided me with a detailed account of the reception and subsequent events. The captain, a courteous Southern gentleman, went out of his way to compliment his host and hostess. He told the Governor General that his Scotch and soda was delicious. The Governor General sighed as he responded: "Alas, due to the abominable British blockade, this marks the end of my whiskey supplies. I shall have to wait till war's end to replace them."

"No problem," replied the captain."I have several cases of whiskey on the Lone Star. I'll be glad to leave them on the dock for you at Tamatave when we sail. We'll be stopping to refuel in Durban and I can replenish my liquor locker then."

Later, while chatting with the Governor General's wife, the captain commented the hors d'ouevres she had provided were superb. "Do you know, captain,"the lady replied, "that was the last can of anchovies on the island, and my supplies of truffles and caviar are also exhausted. Because of the blockade, I do not know when I

can obtain replacements."

Gallantly the captain replied "Madam, whatever delicacies I can find in the Lone Star's larder will be left for you in Tamatave, along with the whiskey I have already promised your husband."

The reception ended in this aura of cordiality, the consul escorted the captain back to his train for Tamatave, and all seemed well. Back at the port loading of graphite proceeded smoothly with the intention of sailin g the following week to Fort Dauphin, where the mica cargo was to be taken on board.

But two days later the situation took a dramatic turn. Listening to the radio in Washington early one morning as our carpool of Metals Reserve employees was on the way to work, we heard the dramatic news that President Roosevelt had decided to take over al l French ships then in United States ports, including the famous liner Normandie. Following the fall of France, much of the country's merchant fleet had been interned in neutral ports. Heavy losses of British cargo vessels due to attacks by German submarines had created a shipping squeeze. To keep export movements from the U.S. flowing, President Roosevelt had decided to take over the French vessels.

When our group heard the news we immediately thought of the Lone Star. Would the Madagascar regime, with its ties to Vichy, decide in retaliation to take her over? A quick consultation with our counterparts in the State Department resulted in a decision to instruct Lone Star to sail immediately from Madagascar with whatever cargo she had loaded, rather than risk losing her and her cargo. But how to get word to her? It seemed best to communicate with consul Carter in Tananarive and let him issue instructions to the captain.

When the coded message arrived, Consul Carter had a problem. He was 90 miles from the port. He believed the French administration had a tap on his telephone line. A straight telephone message might alert the officials. On the other hand he had no idea what telegraphic codes, if any, were available to the Lone Star operator. And then he had a brilliant idea. He would use the phone but resort to American slang that would puzzle the French.

He phoned the dock in Tamatave, the only dock in that port. It turned out that Lone Star had been moved out to anchor in the harbor to make room at the dock for the freighter from Indo China, which had arrived the night before and needed to discharge some perishable items immediately.

A launch was sent out to get Lone Star's captain, who immedtiately returned to the dock. Precious minutes had elapsed, but the consul waited patiently. When he heard the captain's voice he said "Captain, I have a message from your people for you. Can't understand why they sent it to me rather than directly to you, but I thought I'd best relay it to you. It's a single word. The word is 'Scram.'"

"I read you loud and clear, consul," the captain replied. "Thanks very much. Give my regards to the governor general and his lovely wife."

The captain returned to his ship. The tide was flowing out of the harbor. To avoid attracting attention, the captain didn't have the engines started but simply floated out of Tamatave with the tide. About 3,000 tons of graphite was on board - more than half the targetted amount - but of course none of the mica.

Missing were three members of the crew. They had been granted shore leave and were doubtless enjoying suc h distractions as Tamatave had to offer. The captain did not dare to send others of his crew ashore to round them up -that would take precious time. He felt certain Consul Carter would do what he could for them. Lone Star, once out of the harbor, headed straight for Durban.

After the ship's departure, Consul Carter was busy. First he received a telephone call from an indignant Governor General.

"My dear Carter," that dignitary said, "I have learned of the unceremonious departure of Lone Star. I know why that happened. Your people may have thought we would try to take the ship over. But that would not have been possible. We have only a single operative cannon left in the fort guarding Tamatave harbor and it has not been fired in years. No way could we have held Lone Star against its will. What really troubles me is that the captain sailed off without leaving behind the whiskey he had promised me or the delicacies he had promised my wife. That is not becoming in someone who was our honored guest two days ago."

The consul did what he could to smooth the ruffled feathers, but the resentment was obvious.

In due course he heard from the three stranded crew members. They pointed out that under U.S. merchant marine regulations, crew members stranded in foreign ports through failure to receive notice of changed sailing plans were entitled to full pay until returning to their home ports.

Consul Carter felt if he advanced the men all the pay to which they were entitled the internal economy of Madagascar might

be disrupted by their spending - U.S. seamen's wages being far in excess of prevailing Madagascan wages. He compromised by advancing half of the sum due them, with the assurance that their employer, Lykes Steamship, would make up the balance when they eventually returned home.

The date of that return was obviously a question mark. With nothing but their own amusement to consider, the three men settled down happily in Tamatave, where they became well-known and welcome visitors. Doubtless they did not lack for female companionship and they could leisurely bask on the beaches, travel about the tropical countryside, sample the local cuisine and imbibe the local beverages.

Meanwhile Lone Star made its way safely back to the United States to discharge its graphite cargo. Even though less than had been hoped for, it alleviated the immediate shortage. A long-term problem persisted. The failure to obtain any mica caused anxiety among electrical manufacturers who were revving up production to meet American defense requirements and heavy demands for Lend-Lease shipments to the British and later to the Soviet Union, that had been drawn into the war in the same month of June.

American officials reopened conversations with the French and the British. They proposed that a second vessel should proceed to Madagascar to obtain graphite and mica. This time the Vichy representatives raised the ante. They insisted they would ship no more of either mineral unless simultaneously with those shipments they could obtain the materials they desperately needed for Madagascar. The British were kept apprised of these conversations, which proceeded with what - in another context - the Supreme Court once characterised as

due deliberate speed.

Agreement was reached by September. The plan was for the United States to dispatch a freighter to Madagascar. At the same time the French would divert their Indo-Chinese vessel to Manila in the Philippines. A French diplomat would be on board the U.S. vessel and an American diplomat would be on board the French ship. The list of goods to be imported into Madagascar was carefully vetted by the British. The materials to be exported from Madagascar included not only flake graphite and phlogopite mica but, in addition, quantities of vanilla beans and raffia - two Madagascan products that were as unique as their graphite and mica. The vanilla beans were wanted by U.S. ice cream manufacturers, who asserted they were essential for the production of genuine French vanilla ice cream. The carrot growers of Texas asserted that Madagascan raffia provided the best means of tying bunches of carrots.

The American diplomat selected for the assignment aboard the French ship was a young consular officer named Moore, who had been serving as vice-consul in the port of Mazatlan, on Mexico's west coast. He visited me in Washington that fall to learn the details of his new assignment. I told him he would board the French vessel in Manila, exchange signals with his French counterpart aboard the U.S. vessel in Madagascar, and remain on board to supervise all loading of cargo - making sure that only agreed items were placed in the vessel holds. No doubt a young French diplomat was being similarly coached as to his duties.

West Hardaway, a Liberty freighter built during World War I, was the U.S. ship chosen for the second Madagascan trip. For most of the

intervening years it had been quietly rusting away at anchorage with other Liberty ships near West Point on the Hudson River in New York State. After the outbreak of World War II, however, demand for ship tonnage intensified and it had been restored to service. It was not a speedy vessel - 8 knots an hour was its cruising speed. Because it would be flying the American flag and the United States was not at war, the expectation was that Axis naval vessels would not undertake hostile action.

By the end of November, 1941, both vessels were in place at their loading stations. The consular officers were on board. They exchanged the stipulated messages. In Fort Dauphin, the Madagascan mica port, and in Manila the task of loading began.

And then the Japanese bombs fell - first in Honolulu and next in Manila.

The first ship to be hit in the bombardment of Manila was the ship from Indo China. She sank at dockside. All the crew survived, including Consul Moore. However, when the Japanese captured Manila on January 2, 1945, he was still trapped in that city. He was imprisoned at San Tomas, with other United States civilians, and remained there for more than three years until the liberation of the city in February, 1945.

The French on Madagascar recognized that the United States was not responsible for the loss of their ship. Having been assured that in due course they would receive the specified goods originally listed for shipment from Manila, they agreed to the prompt loading of the cargoes of mica, graphite, vanilla beans and raffia. By mid-December

West Hardaway sailed from Madagascar for Durban not only with its highly valuable freight but also with three passengers - the castaways from Lone Star.

By this time the United States was fully engaged in war with Germany and Italy as well as Japan. In Washington nervousness about West Hardaway's ability to evade hostile submarines prompted a decision to transfer its Madagascan cargos to three swift Navy transports that were returning to the United States after having discharged Lend-Lease supplies for the British in Egypt. Dividing the risk and reducing transport time was seen as sensible insurance.

And so it turned out. All three Navy transports made their way safely back to U.S. Atlantic ports. West Hardaway had replaced graphite, mica, vanilla beans and raffia with tonnages of South African chrome and manganese ores. These were also strategic but not nearly so scarce as the Madagascan commodities.

Two or three days out of Durban, having rounded the Cape of Good Hope,and started northwestward on the Atlantic, West Hardaway was spotted by a German U-boat, torpedoed, and went to the bottom of the sea. Most of its crew survived.

The outcome of the voyages of these two pedestrian freighters: the Allies secured badly needed supplies of graphite and mica, Consul Carter displayed unique resourcefulness, the Governor General of Madagascar and his wife had to wait many months to replenish their supplies of liquor and exotic canned goods, three American sailors had an unexpected tropical vacation for six months at full pay, and Consul Moore spent more than three years in a Manila prison instead of dealing with trade and passport problems in a Mexican port.

SIMON D. STRAUSS

Appendix C

The World Situation in Zinc

Needs of Western World Placed at 1,500,000 Tons a Year; Russian Bloc May Have Had 300,000 Tons Available in 1947

By SIMON D. STRAUSS*

Sales Manager

American Smelting & Refining Co.

SIMON D. STRAUSS

THE topic that has been assigned to me for discussion this morning is "The World Situation in Zinc". Like the schoolboy who was asked to give his opinion of the future of the gold standard and correctly answered that he had none, I could very properly complete this assignment by informing you that there is no such thing as a world situation in zinc and, possibly to our mutual relief, sit down.

For the fact is that the situation in zinc, at least in so far as it is ascertainable from an office chair in New York, is a very different matter in some parts of the world than it is in other parts of the world. For all practical purposes the "Iron Curtain" that separates Eastern Europe and the northern two-thirds of Asia from the rest of the world is not only an effective barrier against dissemination of information on matters political and military, but it is also almost entirely effective with respect to data on the production, consumption, and stocks of zinc.

As this is a very important part of the world today, my inability to give you more than fragmentary information regarding what is happening in that area obviously detracts from the value of this study.

We do know that the Polish Government, which is now the operator of the zinc-lead mines and metallurgical plants in Upper Silesia, has announced with some chagrin that production of zinc in 1947 was only 93 per cent of the objective. The American Bureau of Metal Statistics has reported the Polish production as 79,000 short tons, indicating that the objective was approximately 85,000 tons. Apparently a portion of this metal was obtained from imported concentrates, presumably largely from Yugoslavia, another Russian vassal state. After satisfying home demand, Poland exported zinc to Russia, Scandinavia, Holland, and Czechoslovakia.

Zinc Behind the Iron Curtain

As to the production of zinc concentrates in Yugoslavia, very little is known. Some concentrates from that country have gone to smelters in Belgium and The Netherlands for treatment in addition to the exports to Poland mentioned before. Prior to the war the Yugoslav production was in the order of 30,000 to 40,000 tons of zinc contained in concentrates per year. The current production may be as great as that; it seems unlikely that it has been expanded beyond that level. In Czechoslovakia the two zinc smelters, as far as is known, have not resumed operations. During 1947 Czechoslovakia apparently imported about 25,000 tons of zinc metal. As for Russia itself, there is no report of any direct zinc purchase from any seller in the United States, Canada, Mexico, Australia or the United Kingdom. Presumably a fair portion of the Polish production, possibly 20 per cent or 30 per cent, went to Russia. For the rest, the Soviet Union appears to have been dependent on its own resources and those of the Russian zone in Germany, but as to what these amounted to, one cannot say. Prior to the war, Russia was an importer of zinc and its home production at that time was thought to be in the order of 80,000 or 90,000 tons a year. This was probably expanded during the war and there have been many reports to that effect.

Of the other countries in the Russian bloc, none are known to have zinc smelters or to be producers of zinc ores in any volume. Furthermore, apart from Czechoslovakia, the only country within the Russian orbit that has been importing zinc in volume is Finland.

In sum it appears that the Russian bloc at most may have had available to it during 1947 something like 300,000 to 350,000 tons of zinc, and it is probable that the actual figure was less than that — say 200,000 tons.

Zinc in Western World

Having dealt first with the phase of the subject of which least is known, let us now deal with the rest of the world, which I propose to identify as the "Western" world even though my geography indicates that this is not a strictly accurate designation. Even in this fragmen of the globe it is difficult to speak in any broad generalizations regarding the position of zinc. The exi

* Address presented at 30th Annual Meeting American Zinc Institute, Inc., St. Louis, Missouri, April 16, 1948.

for the purpose of building up the stockpile.

I would like to venture a suggestion as to how such a plan for acquiring stockpile copper at over-market prices might be advantageously carried out. We believe that the best results would be obtained, both as to the amount of copper which could be acquired and as to the cost of the operation both in money and in manpower, if procurement for the stockpile were placed in the hands of a single administrator with some experience in the mining industry and with a knowledge of metal markets. He ought to be empowered to buy copper for the stockpile from the domestic market when it is available without interference with the domestic economy, and to act promptly without going through the present complicated Treasury procurement procedures. He ought to be empowered to purchase foreign copper on a long-term contractual basis if necessary. As regards premium prices here, he ought to be empowered to make contracts on a mine-to-mine basis and for a long enough period of time to induce the operators to go ahead, and, where necessary, the price which he should be willing to pay ought to include enough to amortize any initial development that may be necessary. We think also that such individual mine contracts ought to be made with due regard to cost to the Government of the metal, and to manpower considerations; unless due consideration is given to those factors, particularly the manpower problem, the over-all effect of the program might mean actually very little increase in production.

We think such a program would be apt to work better than any plan along the lines of the Premium Price Plan of the last war; under any such Premium Price Plan we fear that the maximum results in the way of production will not be obtained.

I want to emphasize that it is my understanding that under any such proposal the over-market-priced copper produced would be placed in the stockpile, and that we are not talking about a proposal under which the copper produced at over-market prices would be marketed in competition with copper sold at the market, as to which quite different considerations are involved.

SILVER — MONETARY METAL OR INDUSTRIAL RAW MATERIAL

By

SIMON D. STRAUSS

As presented before the Mining and Metallurgical Society of America

December 17, 1959

SILVER — MONETARY METAL OR INDUSTRIAL RAW MATERIAL

By

SIMON D. STRAUSS

As presented before the Mining and Metallurgical Society of America
December 17, 1959

As you may suppose, this is the opening gun in the campaign to renominate William Jennings Bryan (laughter), or perhaps some other Democratic candidate who has not had too much success so far, but is looking for some good platform on which to run for a third time

Seriously, I think silver has suffered for years from an extraordinarily bad press. The people who tend to be pro-silver — and I warn you now that I intend to be pro-silver — people who tend to be pro-silver are usually looked upon about in the same class as those who believe in companionate marriage or a diet made up of truffles, blackstrap molasses and wheat germ. In other words, there is something just a little bit queer about people who believe in silver. This is particularly true here in New York, which is the center of economic orthodoxy where the great banks and daily press unite in throwing the laurels back and forth as to being sound theorists on economic subjects and understanding the true meaning of money management, etc.

Gentlemen, I am not a bi-metallist, to begin with. Secondly, I do not claim to know much about monetary theory. But as Mr. Goodwin has been kind enough to indicate in his opening remarks, I do have a feeling that when the use of any commodity, whether it has monetary overtones or not, is persistently in excess of the production of that commodity, sooner or later something has got to give. In the case of silver, the record is very clear.

Even those organizations which stoutly maintain that the price of silver is high; that the silver producers are being subsidized by the government because of a rapacious block of western congressmen, who at the expense of the public as a whole, put over this vast hoodwink on the U. S. Treasury — even these people who feel so strongly that somehow or other the silver miners are living high on the hog, or high on the — what is it? — I think it is high on the hog. Even those people who think the silver miners are living high on the hog at the expense of overburdened taxpayers, even those people (when it comes to publishing the statistics as the United States Mint does in its annual publication) have to recognize that the consumption of silver for industrial purposes, plus coinage of

silver, year after year, is in excess of the new world mined production of silver. Those facts are indisputable and they are there on the record for all of us to see.

To really understand it, we have to go back to the days when Father Coughlin, Raymond Moley, President Franklin D. Roosevelt, Senator Key Pittman and a few other people, in varying degrees, were responsible for the passage of the Silver Purchase Act.

The Silver Purchase Act did three things. In the first place it did not provide for the purchase of domestically mined silver. It simply provided that the domestic miner of silver could take his silver into the United States Treasury, have it minted into silver dollars and then he could get back from the Treasury some of those dollars and the Treasury could keep the rest.

To start off with, the proportion was fifty percent. Mr. Hardy's company delivered a hundred ounces of silver to the government and got back fifty ounces of that silver coined in the form of silver dollars. Or if they preferred to have a check to deposit in the Bank of Spokane, they could get a check. But at any rate, the government said the silver was worth $1.29 in the daily statement which the U. S. Treasury puts out, and it gave them sixty-four cents an ounce.

This was not a purchase, and you can read the so called Silver Purchase Act from cover to cover and you will not find anywhere the word "Purchase" as it applies to domestically-mined silver.
The government acquires. It does not buy domestically mined silver.

However, the government did undertake in the Silver Purchase Act to buy silver of foreign origin. The Act very clearly says that the United States Treasury was to buy silver of foreign origin until the amount of silver held by the United States Treasury valued at $1.29 an ounce was equivalent to twenty-five percent of the value of the total monetary reserves of the country.

And the third thing about the United States Treasury — about the Silver Purchase Act, rather — was that it said that Mr. Morgenthau, who was then the Secretary of the Treasury, and/or all of his successors were to continue these purchases until this ratio had been established

Now, this latter part of the Act has been, since World War II, honored completely in the breach rather than in the observance. The United States Government did for a time buy foreign-mined silver. It paid prices varying from around thirty-five cents up to

around fifty cents an ounce during the period before World War II. But so far as I know, since the outbreak of World War II, the United States Government at no time has bought silver of foreign origin at any price, nor at any time has the ratio of silver to gold come anywhere close to being one to three. Even taking silver at the $1.29 cent values; that Act has remained on the statute books. It has never been repealed, although Senator Green, Representative Celler and certain other individuals have introduced legislation to repeal it.

In fact, one might say, looking at the record of the Congresses since 1934 up to 1959 (and that is now twenty-five years) that if there is any one item of congressional business which is only slightly less standard than the daily prayer by the chaplain of the United States Senate, it's the introduction of a bill to repeal the Silver Purchase Act. It's almost impossible to have a congressional session without that bill being introduced.

At any rate, the fact is the legislation is still on the books and it has not been observed.

Now, during the period up to the outbreak of World War II, most of the domestically-mined silver did flow into the United States Treasury in response to this legislation which directed the Treasury to acquire the silver. However, the volume of foreign-mined silver that was acquired more or less steadily diminished. The price at which the acquisition of the domestically-mined silver was calculated was revised — I forget the year — but it was revised upward to around seventy-one cents, I think it was. In other words, instead of being fifty percent, it got up to fifty-five percent of the monetary value.

Then World War II broke out. During this entire period from '34 until '39, the silver policy of the United States Government was under constant criticism. The silver bloc of Western senators who had been largely responsible for its adoption was being treated to careful dissection by the economists in all the leading publications: Harpers, Barrons', the New York Times, etc., at regular intervals.

Any economist who wanted to earn a little money doing some free-lance writing, and also work off a little invective, was free to take a pot shot at the silver bloc, and most of them did.

Well, when World War II broke out, the United States Government had acquired partially as a result of this policy and partially because of reserves of silver that it had even before the Silver Purchase Act was passed, two and a half billion ounces of silver. Judged

by any standards, that is a powerful lot of silver, bearing in mind that the normal production of silver in the world, in the pre-World War II period, ranged from 200 to 275 million ounces a year. In other words, the United States Government had ten years' world production under its belt. It had acquired a lot of this silver from monetary sources, including notably, the silver that was held in China. And most people agreed that this was a useless stockpile. Everybody virtually, except us silver miners and the Western congressional bloc.

Everybody thought it was a terrible thing, but there it was.

Well, during World War II, several things happened. In the first place a really serious shortage of copper developed. And suddenly people awoke to the fact that silver has a very important attribute, namely, that it is the world's best conductor of electricity, better, considerably, than copper.

Nine hundred million ounces, or more than one-third of the government's stockpile of silver, was converted into bus bars and other electrical devices for use in government-owned defense plants. That saved, as near as the calculations could be made, thirty five to thirty-seven thousand tons of copper, and even at the ceiling controlled price of copper, that was an important saving to the government because the government didn't have to buy the silver; it owned it already.

There were some people who were somewhat concerned that all this silver lying around the defense plants might be subject to appropriation by individuals to whom it did not belong. However, that problem was largely solved by running several thousands of volts of electricity through it constantly.

So the silver was there in the defense plants and remained there throughout the war. Another 440 million ounces of silver were taken out of the stockpile and shipped to various countries in the Far East: to Indonesia, to India, and of course, what is now Pakistan, even to the Belgian Congo, to Saudi Arabia, and to other areas where, frankly, the allied effort was under considerable pressure.

I don't doubt for a moment that, if the British had not been able to circulate silver coinage which had a recognizable, tangible value to the people of India, but instead had had to pay the Indians in terms of paper currency, with the British Sovereign's name on it at a time when the Japanese were just across the border in Burma, that the trouble that the British and we had in India would have been multiplied many times.

The fact that this is so is, I think, amply borne out by the fact that this was not the first time that silver had come to the aid of Allied efforts in war time.

During World War I, more than two hundred million ounces of silver was minted in the same way and for the same purposes.

The ignorant — perhaps "ignorant" is the wrong word — the uneducated people of the East under pressure have enough understanding to know that the history of the world is replete with examples of paper currency of defeated countries that have not been worth very much after the defeat, but they all know that silver has imperishable value. So the silver stockpile held by the United States Treasury that had been so scorned by the economists and the monetary experts was actually put to good use in this second way.

There was a third use for silver and that was a very important one. Like every other raw material silver came into short supply during the war. The war time production of silver was not adequate to meet the industrial demand for silver, quite apart from the capital use that I have explained in connection with the defense plants.

This was the continuing use of silver for such war-time purposes as photography (and every airplane that flew, virtually, carried a camera and that camera used thousands upon thousands of rolls of film, and every one of those rolls of film was made with silver nitrate). The rescue kit of the allied forces included an item known as a desalination kit which was made of silver. The bearings of the aircraft engines, for the most part, were plated with sliver.

And so we had a great many highly-important industrial and military uses of silver during the war. And the production of silver during the war was not adequate to meet this demand, so the government, which had been accumulating silver under such criticism was able to take another 130 million ounces out of its stock and put it to very valuable use in helping to maintain the production of industrial and military equipment during the war.

In other words, of the two and a half billion ounces of silver that this country held in the treasury at the beginning of the war, only 950 million ounces was left at the end of the war.

Now, that, I think, was a fairly adequate demonstration that regardless of monetary theory and regardless of all the high-flown phrases of the economists, silver has served a very useful purpose in a major struggle.

When the war was over, some of you gentlemen may remember,

there was the period in which there was a good deal of difficulty with regard to price ceilings, with regard to labor situations. And it was during this period in 1946 that the second piece of important silver legislation was passed. In July of 1946, the Congress passed a second act. This act provided that instead of taking fifty-five percent — rather, giving back to the silver miner fifty-five percent of his silver in the form of silver dollars — the government would give back to the domestic miner in the United States seventy percent of his silver. This is the equivalent of a little over ninety cents an ounce.

In other words, for every ten ounces of silver that the United States domestic miner delivers to the United States Treasury, he gets back seven ounces in the form of silver dollars and three ounces are kept by the United States Treasury as its seigneurage or profit.

The second important feature of this legislation was that in response to the demand of the silver consumers who had found out how useful it was to them for the government to have a stockpile of silver during World War II — in response to that demand the Congress added to this legislation a provision that the Secretary of the Treasury **may**, not must, but **may** sell silver to the United States consumer at a price of not less than ninety-one cents an ounce. Not at a price of ninety-one cents per ounce, but at a price of not less than ninety-one cents an ounce. And he **may**, not **must**.

These are very important points to bear in mind

Furthermore, the language of this act specifically said that these sales were to aid in the reconstruction of industry in the period immediately after the war. Well, since that act of 1946, there has been no legislation on silver, and we are still operating under the combined effect of the Act of 1934, the Silver Purchase Act, and the Act of 1946.

As many of you know, the world market for silver has for a number of years, until perhaps the last three or four — the world market has been somewhat under the 90.5 cent price, which is the equivalent of the basis on which the domestic miner may deliver his silver to the U. S. Treasury. Or to put it another way, the price situation — the market situation of silver was such that substantially all of the silver mined in the United States was during most of the period, up to 1955, being delivered to the United States Treasury. And the domestic miner was taking back his seven ounces of silver out of every ten he delivered. The foreign miners were selling their silver in the open market to meet industrial needs and the price which they received varied for the most part between seventy cents an ounce and about eighty-eight cents an ounce.

Now, this price fluctuated, but fluctuated much less than the average price for raw materials. The reason for this was that the Bank of Mexico, which knows a good thing when it sees it, had recognized from what had happened during World War II what the basic situation in silver was. Mexico, as we all know, is the world's largest producer of silver. And the Bank of Mexico, under the very able management of its director, Don Rodrigo Gomez, recognized that a very small amount of market operation on the part of the Bank would be sufficient to stabilize the price of silver to a considerable degree.

Whenever the silver production appeared to be momentarily in excess of consumption, the Bank of Mexico bought. Whenever demand increased and production did not, the Bank of Mexico was willing to sell. This operation was carried on for about fourteen years and it has been done with more success, more skill, and incidentally, a more profitable result than any other government operation in the field of non-ferrous metals with which I am acquainted. The Bank of Mexico has made a consistent profit out of this. They have succeeded in putting a floor under the price of silver, and in the long run they have liquidated this stock at a substantial profit.

If one could have similar confidence in other government operations, there might be less reluctance, perhaps, as to consider such things as an ever-normal granary operation in lead and zinc, to mention two four-letter words.

I said at the start of this speech that the consumption of silver has been consistently in excess of the production of silver and you may say, well, now, how come if that is so, why didn't the price immediately go up and stay up at the ninety-one cent price at which the United States Treasury is authorized to sell?

Well, the answer is that there are competitors to the United States Treasury. First of all, there is perfidious Albion. I'm just joking; actually, I am very fond of the British. The British decided in 1946 that they were going to have to repay the silver that the United States Government had lend-leased them during the war. Because the lend-lease agreement clearly said they had to pay it back, they were prepared to pay it back. They didn't want to go out into the market and buy the silver, fearing that they would force the price up. So they decided that the British half-crown and the British two-shilling piece and the British shilling piece, which always had been minted of silver, should no longer be minted of silver, but should be made of copper, zinc, and, Mr. Fraser knows only too well, nickel.

So the British demonetized silver. They called in all their coinage over a period of years and from that they recouped more silver than they owed the United States Government under lend-lease and being thrifty and tidy operators, they sold the surplus to their own consumers of silver which was very understandable at a time when the British exchange position was difficult. Because silver, on balance, is a commodity product in the dollar area and the British were very short of dollars. So they called in their silver coins and they took care of their home demand for years, for the large part, out of the demonetized silver.

Cuba — and this was before Mr. Castro got down there — decided that it didn't want silver coinage either. They had about 80 million ounces of silver in the form of Cuban silver pesos. They felt they didn't want it and they marketed that over a period of three or four years, being skillfully guided in their operation by the advice of one of the New York banks.

The Spaniards had a lot of silver and a good deal of this came back on the market. There was also silver leaking into the market from the Far East. This was all non-producer silver, but over the years gradually got mopped up.

At the same time the industrial requirements for silver were starting to increase, and, most remarkable of all, a number of the countries of western Europe, hard up as they were for cash, suddenly decided that they would like to coin silver, too. Now, this is interesting and I think rather prophetic as to the future of silver, because the countries that decided to remonetize silver were precisely those countries that had gone through the most drastic experience in the devaluation of currency in western Europe. In other words, Italy, Germany, Austria, and most recently of all, France.

I think there is a lot here that, regardless of what the learned economists say, merits very serious attention.

The people of these countries have seen their paper currency deteriorate to the point where it has little or no value.

Their governments recognize that their citizens have little or no confidence in paper currency. Their governments recognize the fact that from the standpoint of their own internal economy it is desirable to have a currency in which people have confidence. And while the amounts of silver they have used have not been large, the mere fact that they have been willing at a time when they had many, many demands in their budgetary situation for tax revenues, for other purposes, the fact that a country such as Italy or a country such as France is willing to take part of its tax revenue and buy

silver with it for the purpose of coining silver, I think, speaks volumes.

They could just as easily have put out coins of aluminum or nickel or copper, the prices of which are all substantially lower than the price of silver, but they chose silver, and the reason for it is quite clear.

The new French coin, for instance, is going to carry a five-franc denomination; the new franc, each one of which is going to be equal to a hundred of the old ones. That five-franc piece will have a value of a dollar in terms of U. S. currency, and will have approximately fifty cents worth of silver in it. That means to the French citizen that the maximum devaluation that he is likely to see in his coin is half. In other words, the face value would be replaced by the intrinsic value of the silver in it. Whereas, he knows quite well that the 500 franc paper note that he carries in his pocket now could deteriorate, as the franc has, to one percent of its face value.

So I think that this is a trend which has terrific significance, and which, for some reason unknown to me, is not being taken at all seriously in Washington. Mr. Hardy, perhaps, can tell you something about that.

At any rate, we do have currently a very definite trend back toward silver coinage in other countries. And in the United States, itself, where we are running into more coin-vending machines, the need for silver for coinage is enormous: Telephones, candy machines, book-vending machines. Well, you are all familiar with them. The transportation equipment and so forth. So that the United States Treasury itself is currently using thirty-five million ounces a year, roughly, for coinage of dimes, quarters and half dollars.

Now, I said that the Treasury may sell at a price of not less than ninety-one cents an ounce. In fact, the Treasury may only sell silver out of its so-called "free stock."

The free stock, in turn, is what represents the profit to the Treasury from its silver transactions. And I have said also that out of every ten ounces of domestically-mined silver that is delivered to the Treasury, seven ounces are in effect returned to the miner, three ounces kept by the Treasury. It is only out of that three ounces that the Treasury can sell.

Now, the quantity of free silver that the Treasury has on hand has varied considerably. When the war ended it was over 200 million ounces. By 1955 it had dropped down to just a few million ounces. Suddenly it bounced back, way up, over 200 million ounces again. Why did it do that? Well, it did that for one reason only and that

was that the countries which had lend-leased silver from us during World War II repaid this obligation during the years, roughly, '55, '56, '57 and '58.

Of the 400 odd-million ounces that were loaned out under lend-lease we have now brought back into this country all but something like 30 million ounces. So that there is little more silver to be obtained for the free account of the Treasury from lend-lease returns.

Out of the free silver the United States Treasury is minting its subsidiary coinage and it is also selling to industry.

At the end of June of this year, the Treasury daily statement, which I have here with me, showed that on June 30th there was 212 million ounces of free silver on hand. As of December 9th, that is down to 178 million ounces. In other words, 34 million ounces have been taken out of the free account in just a little over five months. Why did that happen?

Well, it happened because there were some strikes. The copper and lead industries went out on strike and the consumers had no place to turn for silver except to the Treasury. And the Treasury has been selling freely at ninety-one cents an ounce from San Francisco, which means ninety-one and five-eighths cents an ounce delivered in the New York area after you allow for transportation.

This has drawn down the account, and in addition there has been a certain amount of minting of silver. As of today the free silver account is 178 million ounces. The prospects for adding to this free silver account are virtually negligible. Even if, under a certain set of circumstances all of the domestically-mined silver again began flowing into the Treasury, only three ounces out of every ten can go into that account. And that means, with the domestic production of 35 million ounces, only 10,000,500 ounces a year at most can be added to the account.

Furthermore, there is no lend-lease silver left to be returned except thirty million ounces. So the day is coming, it looks to me, that the Treasury is going to have to stop selling in any case. How rapidly it will come will depend on the industrial requirements for silver, on the volume of outside production and on the rate at which the United States coins silver. But if it is going to coin silver at the rate of 35 million ounces a year and even after the strikes are over, if the rate at which industrial purchases for silver should drop to say ten million ounces a year, you can arrive at a figure of 45 million ounces drained out annually with nothing coming in. Your 178 million ounces could last perhaps four years at most.

Let me turn now to the supply side of the silver industry. I have said that the consumption has been in excess of the production. The production of Silver, as most of you know, is today largely derived as a by-product of copper and lead production. There is in the world today a very, very small silver mining industry. I think actually the industry in northern Idaho which Mr. Hardy represents; perhaps such a mine as the United Keeno Mine in the Yukon, which is both silver and lead, but where the silver values tend to run somewhat higher than lead, and a few scattered mines in Mexico and Peru, represent the world's silver mining industry. The bulk of the world silver production, as I say, comes really from lead and zinc and copper deposits.

It is a curious thing that, with the volume of copper, lead and zinc production in the world running at levels well in excess of what they were during the 1930's, the production of silver today is still actually lower than it was in the '30's. Why is this?

The answer is plain to see. The copper mines that have been exhausted are mines like the United Verde mine which was a very substantial silver producer in Arizona. It has been replaced in Arizona by a mine such as San Manuel which carries virtually no silver with it. If you look down the roster of new major base metal producers of the world, whether the zinc mines of North Africa or the zinc mines of Tennessee or the new operation in Missouri or the Toquepala and Salvador projects in South America or the Rhodesian mines you will find that most of those carry little or nothing in the way of precious metal value. So you have this divergent trend which is something that I think the consumers of silver do not as yet appreciate.

They are living in a fantasy world, in my opinion. They think to themselves that the silver-producing industry has been subsidized and pampered all these years by the United States Government, and that if only they could get this blasted legislation removed, they would be able to buy silver cheap. The fact is that the next major change in silver prices can be in only one direction, and that is up.

It has to be that way, because, as I say, in the long run the law of economics cannot be repealed and the use of silver is in excess of the production of silver. There is no getting away from it.

How long you can continue to draw on the accumulations of the centuries of mining silver that exist in the world, I don't know. And, of course, one of the arguments that is brought up when you talk about the price of silver, well, if the price of silver goes up, a lot of coins are going to be melted down and come back into circulation.

Perhaps so. I am inclined to doubt it. It might be so. Nevertheless, in the long run, the trend is upward.

Now, I said very little, actually, about the industrial uses of silver. My associate, Mr. Wilcox, who is here this evening, gave a talk on this subject before the Colorado Mining Association in Denver, just in February of this year and he has brought over with him copies of his paper. And rather than go through the same information again, if any of you are interested, Mr. Wilcox will be glad to give you a copy of his paper. But suffice it to say that the increased industrial uses of silver have little or nothing to do with either its monetary factors or its undoubted ornamental attractions. In other words, it isn't the artistic uses of silver that are increasing. It is the true industrial uses which are based on silver's rather unique properties. Its high electrical conductivity, its heat transmission possibilities. Its value, for instance, combined with zinc as a long-life battery. Its brazing characteristics — really the most rapidly growing use is in the brazing of alloys and other applications of silver which have nothing to do with either money or the arts. These uses will continue, because the properties of silver are going to be in demand in a world where space is at a premium in missiles, space-age targets and the like. So I am confident that industrial requirements will rise, and they are rising in countries which in the past were never buyers of silver.

For instance, our company, as far as I know, in the past never sold silver in Japan. But today there is an insistent demand from Japan based on the electronic and photographic industries that are growing so rapidly in that country, for the importation of silver.

The silver requirements of Germany and of Italy are now rising, but it is being used for industrial applications and not for silverware.

So you have a picture here of a metal which is undergoing, really, a transformation. But because of the fact that there is this stock of silver available in the United States Treasury, and because thus far the United States Treasury has been blindly, and I use this word advisedly, blindly following the policy of just shelling out the silver at the minimum price stipulated by the law, there is a feeling of smug self-satisfaction on the part of consumers.

If I were a consumer of silver, an important consumer of silver, and the life of my industrial enterprise depended on it, I would be concerned that the volume of supply might not be adequate in the long run to take care of my requirements. And far from trying to depress the price of silver, I think I would have some interest in

seeing a higher price for silver. It would bring about added production. However, I say this because actually there is no product in which silver is the chief element of value, even in sterling ware.

If you gentlemen will wander into any jewelry store and purchase a place setting of silver, the average place setting will run somewhere between $27.50 and $32.50 a place setting. That place setting will contain seven and a half ounces of silver. And seven and a half ounces of silver at ninety cents an ounce is only about a little more than six dollars worth of silver. So even in this case, which is the most conspicuous use of silver, where the use is most concentrated, the silver is a very small element in the total price. When you come to talk about the cost of a space missile or even photographic film, silver is just an infinitesimal part of the total cost of that product. And it is far more important to the manufacturers of those products that they have an adequate supply of silver than it is that they should be happy to buy silver a little more cheaply. I say to the consumers of silver, and none of them are here this evening except one or two processors, I say to the users of silver that they ought to start thinking about this quite clearly. As far as the officials of the United States Treasury are concerned, I think before they continue with their present policy (which is to sell silver at ninety-one cents an ounce for as long as they have it), they ought to consider whether or not they shouldn't perhaps modify their policy.

There is nothing in the law that says they must sell silver. But even if they want to sell silver and I can quite well understand under the present situation where a large part of the country's supply is cut off by strikes, they probably feel it is desirable to continue selling it — there is nothing that says they have to sell it at ninety-one cents. They can sell it at any price which in their judgment reflects the value of the metal in excess of ninety-one cents.

Today, the market price of silver in England is a little over ninety-three and five-eighth cents an ounce. In other words, the United States Treasury today is selling silver at a discount to domestic consumers. Only domestic consumers can get Treasury silver, incidentally. Silver cannot be sold by the Treasury for export to other countries. It might be very well for the Treasury to consider a policy of adjusting its price upwards in order, perhaps, to prolong the life of this limited free stock which they have on hand, otherwise one day they are going to wind up finding they haven't any, and when that happens they are then going to have to take silver which is on their books at $1.29 an ounce and use that for minting the subsidiary coinage.

Whereas, today, using the silver that is on their books at the world price, they are making for themselves a very handsome profit in minting coinage, of approximately forty-five cents an ounce. I say forty-five cents an ounce, because your quarter, your half-dollar and your dime contain silver valued at a rate of about $1.36 or $1.37 an ounce rather than the $1.29 which is the ratio of the value for silver in the silver dollar.

Well, these are the main considerations that I would like to bring to your attention. It is a subject, which, as I say, has not received serious consideration, simply because of the overwhelming prejudice against silver based on the outlook of the economists and the banking people here in the East who actually bridle every time the word silver is mentioned. Sometimes even in talking with our own directors at the American Smelting and Refining Company, I find myself sort of apologizing for mentioning silver to those of them who are outside the immediate family because they seem to consider that there is something just a little peculiar about silver or anybody who claims it has value. But I say that any product where the demand consistently outruns the supply, any product such as that is undervalued. And that is the case with silver today.

Thank you for your attention, gentlemen

For Presentation at the London Metal Exchange
Annual Dinner, Grosvenor House Hotel, London,
October 27, 1970, by Simon D. Strauss,
Vice President, American Smelting and Refining Company

Mr. Chairman -- Gentlemen:

It is a great honor to appear before this distinguished group, particularly since you have chosen as your speaker for the second consecutive year a representative from your former North American colony. This is an outstanding example of British magnanimity. Here you are, prepared to listen to a rebel from a territory that revolted against your rule less than two hundred years ago. How few other nationalities would practice such forbearance!

In thinking over subjects that might interest you, it occurred to me that perhaps it would be appropriate for someone who is directly involved in selling copper at a price other than that quoted on the London Metal Exchange to offer some thoughts on the so-called two-price system for copper. First, I looked in the dictionary to see precisely what the word "system" means. According to the dictionary a system is "an ordered and comprehensive assemblage of facts, principles, doctrines, or the like in a particular field of knowledge or thought."

I think you will agree that the two or more prices prevailing in the copper market are hardly the result of an ordered and

comprehensive assemblage of anything. On the contrary copper is sold by different people on different pricing bases precisely because the market has not been ordered and certainly has not been assembled.

I am not suggesting that this is a bad thing. On the contrary there is much to be said in favor of the mild form of anarchy which frequently appears to prevail in the copper market. This theory is advanced in spite of thoughts to the contrary advanced by students such as Dr. Houthakker of President Nixon's Economic Council and the opinion frequently expressed by my friends of the London Metal Exchange who emphatically state that obviously there should be only one price for copper and that should be the price on the London Metal Exchange.

Ever since the price of copper on the L.M.E. began its rise in early 1964, the U. S. copper producers have been overwhelmed with advice as to what they should do. This came from producers outside the United States, from the consumers in the United States, from the press and from the government. Much of the advice was conflicting. You will all recall that President Johnson and his economic advisers scolded the copper industry for attempting a modest 2¢ a pound increase in the price of copper, in the fall of 1965, when the London Metal Exchange price was almost double that quoted by domestic producers. More recently the industry has been rebuked by President Nixon's administration

for selling copper to consumers on the basis of the producer price because that price at the time was less than the outside market price which certain consumers had to pay.

This is very much like the ancient Spanish legend of the miller who with his son was taking a mule to market. When both the miller and the son rode on the mule, they were criticized for abusing the animal. When only the miller rode and the son had to walk, the miller was criticized for injuring his son. When the son rode and the father walked, the son was cited for not respecting his parent. When both walked behind the mule, they were laughed at for being foolish.

Most United States copper producers, somewhat punch-drunk from all the advice they have received, recognize that there is no possibility of pleasing everyone and perhaps that they may not please anyone. Nevertheless, there is a widely held view in the United States that prices that change twice a day are not a desirable means of marketing a basic industrial raw material that must compete with products whose prices change infrequently.

The principal elements with which copper must compete are aluminum, or to translate it into English, aluminium, the price of which changes rarely more than once or twice a year; stainless steel, the price of which changes perhaps once a year; fiber glass, the price of which rarely changes; and various types of plastics, the prices of which change quite infrequently.

When a manufacturer in the United States considers whether or not he will use copper for a given purpose, he is concerned not only with the absolute level of price but also with the frequency with which the cost of the material to him may vary during the period of his manufacture. As you know, the U. S. automobile industry makes model changes once a year. Prices for these models are likewise set once a year. Consequently the car manufacturer in selecting his raw materials wants to be able to estimate with reasonable certainty how much the components going into his vehicle will cost during the period of production. Changes of 30 to 40% in those costs during the model year disturb him considerably.

I am well aware that Dr. Houthakker has suggested that the copper industry in the United States should adopt a commodity exchange basis for establishing its prices -- not necessarily the L.M.E. -- possibly the New York Commodity Exchange. I know, also, that one of the leading members of your Exchange ventured the opinion, when he was in the United States last year, that within three years the producers in the United States would adopt something akin to the L.M.E. price.

Furthermore, a distinguished executive of one of our smaller copper companies has expressed similar sentiments.

I assume, therefore, that the gracious thing for me to do on this occasion would be to tell you that the U. S. industry

has at last seen the true light and these predictions are about to come true. You would all be extremely pleased if the American copper producers would at long last adhere to the true gospel according to Whittington Avenue.

I must make it clear that I cannot speak for any one other than myself. The laws of the United States are very specific as to price agreements between competitors. However, speaking only for myself I must tell you that I think it unlikely that in the foreseeable future the major U. S. producers will alter their pricing methods -- unless required by law and this is only a remote possibility.

Parenthetically I would like to take my hat off in admiration to the inventor of that delicious phrase "the foreseeable future". World history of the last few years makes it abundantly clear that the future is not foreseeable. In making predictions for the foreseeable future one seems to be saying something significant and yet one is completely absolved of any specific responsibility over any defined period of time.

The reason that I do not expect a significant change in the U. S. copper pricing structure is that the large buyers and the large sellers do not want it. The producers feel that they should name the price at which they sell and not turn this function over to a third party -- whether it be the government, a commodity exchange or any one else. The majority of the consumers -- at

least in the U. S. -- have a strong preference for a producer price as compared with a price which changes twice daily and which seems to them to exaggerate every twist and turn in the copper market.

Supporters of the London Metal Exchange copper price as a mechanism claim as a virtue the fact that it is so sensitive. They say that only in this way can the industry detect the need for increasing production or cutting it.

Frankly, I am skeptical as to the value of the L.M.E. prices as a guide to production policies over any short period of time. For example, at October 1, 1969, the prompt wirebar quotation was £660-15-0 per long ton. It rose steadily to reach a high of £748-10-0 per metric ton on March 26, 1970. It had fallen back to £509-10-0 per metric ton as of October 1, 1970. As you can see within one year the price rose by 13% and then fell by 32%.

The L.M.E. copper price unquestionably represents each day a freely expressed consensus of that day's world opinion on the value of copper. It brings together in one place and at one time a wide cross-section of buyers and sellers. But to say that this price -- and only this price -- is a correct indicator of the basis on which copper producers should sell their metal seems to me a considerable exaggeration. And as a guide to long-term planning of either production or consumption, a price that has fluctuated within one year by the percentages cited leaves a lot to be desired.

Steel and aluminum producers -- also major metal industries -- appear to be able to set their production schedules and establish their investment programs without a commodity exchange price to guide them.

It has been suggested that when the non-U. S. producers of copper made their short-lived attempt to establish a producer price in the European market between the years 1964 and 1966, two years were lost in encouraging the production of copper from new deposits because the price was being artificially held down.

I cannot accept this theory. New copper production facilities require a vast amount of capital. They take from five to ten years to bring into operation. They are financed on the basis of long-term projections of price and demand -- not on short-term and erratic movements of copper prices on commodity exchanges. The more violent the fluctuation the greater the uncertainty in the minds of potential investors.

In fact, during the two years when the producers outside the United States were attempting to establish a European producer price many of the projects now coming into production were launched by the very sellers who had temporarily declared their independence of the L.M.E. price. Time was not lost in expanding production because of the two-year effort to establish a European producer price.

On the contrary, a number of major projects for copper expansion were delayed in financing and construction during the late '50s and

early '60s because of inability of private management to arrive at understandings with the governments of the countries involved on questions such as foreign exchange, security of the investment, tax concessions and similar relevant considerations.

The shortage of copper which developed in 1964 and 1965 might, in fact, have been avoided if these delays had not occurred. Managements of the major copper-producing enterprises readily recognize that the market is growing at an average rate of between 4 and 5% a year. If they succeed in finding new deposits, they are quite prepared to make the necessary investment without the stimulus of short periods of high but erratic prices. But they do need assurances as to the political climate in which they will operate.

Moreover, it is interesting to observe that almost simultaneously with the decision of the copper sellers to revert to the L.M.E. price in the European market -- for a variety of reasons with which you are all familiar -- the European producer price for zinc was brought into existence. This has, over a period of more than four years, operated with reasonable success. Infrequent changes have been made in the zinc producer price -- on average less than two a year. The L.M.E. has continued to operate -- its zinc prices at times have been higher than those quoted by the producers; at other times they have been lower. No one can deny that each of these prices has had an influence on the other -- and properly so.

The L.M.E. zinc price during this period has been considerably less volatile than the L.M.E. copper price -- partly because there has been a producer price with which to compare it and partly because zinc has not been subject to the political pressures and government interventions which have characterized copper.

Personally I know of no reason why a producer price for copper cannot exist side by side with the L.M.E. price -- or the New York Commodity Exchange price. The so-called two-price system admittedly causes complications and difficulties. But this is true of all the economic arrangements by which industry operates. There is no single foolproof arrangement that meets all situations and all contingencies. It is a natural human desire to oversimplify and to assume that a single panacea can meet the complex requirements of modern society. Frequently we are told that we must choose between one alternative or another because there can be only one answer to a problem.

For example, let me cite a current advertising program carried on by one of the more enterprising tobacco firms in my country. For years this manufacturer has exhorted the public to buy his product because "It tastes good like a cigarette should." Even in the United States, where we are perhaps less sensitive than you are in this country to grammatical niceties, this flagrant abuse of the language has drawn considerable criticism. Bending to the storm, the cigarette manufacturer is now busily engaged with a program which asks the public "What do you want -- good grammar or good taste?"

The implication here is that a choice has to be made and it is not possible to have both -- good grammar and good taste. I think you will agree both should be quite possible. The same holds true for the copper market. There can be more than one pricing system or one method of selling. Despite the criticism heaped upon the existence of multiple copper prices, in my judgment they will continue. Hopefully the differences will be less extreme than they have been at times in the last few years.

I would ask that you gentlemen of the London Metal Exchange in looking at the U. S. producer price for copper should echo Voltaire's famous advice and say "We may not agree with what you are doing but we will defend to the death your right to do it."

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Ideas and trends

By Simon D. Strauss

Why commodity cartels won't work

Suppliers of other raw materials find price-fixing harder than it was for the oil producers

It wasn't supposed to happen that way, but the high prices set arbitrarily by oil-exporting countries have been undermining both demand for and prices of other industrial commodities produced by the less-developed countries.

The plan, as visualized by the Third World countries, was that once oil exporters had established the pattern, it could be followed by exporters of other raw materials. When the U. N. General Assembly held its special session last spring, resolutions were adopted embodying the concept of a new order in which the raw-materials sellers would call the tunes to which the industrial world would dance.

But since that session of the U. N. was adjourned, the tide has been flowing the other way. There have been some exceptions, sugar being one that most housewives will clearly recognize. However, in most commodities–particularly those that depend for their markets on the construction and durable goods industries–demand has dropped precipitously, and prices have come under heavy pressure.

The changed outlook for industrial commodities stems directly from the recession now under way in industrialized countries even while inflation, caused in part by rising oil prices, is still endemic throughout Western Europe, the U. S., and Japan. Industrial activity has fallen, unemployment has risen, and all these countries have serious balance-of-payments problems as they struggle to pay for imported oil. The more oil costs, the less they can spend on other goods.

The situation is not unlike a giant international poker game, in which the oil exporters hold the winning cards and are rapidly gathering most of the chips. Also playing in this game are the Third World countries that export other basic commodities. They want winning cards, too, and expect to collect plenty of chips. Where are these chips to come from?

Imitators. Copper provides one good example of the difficulties faced by exporters of industrial raw materials other than oil. And these difficulties are at least partly caused by the dramatic increase in the cost of oil.

Four developing countries–Chile, Zambia, Zaire, and Peru–are major exporters of copper. As early as 1967, they decided to take a leaf from the OPEC book by forming a copper exporters' organization–known as CIPEC.

These four countries account for about 37% of current world production of newly mined copper outside the collective economies. Four developed countries–the U. S., Canada, South Africa, and Australia–produce slightly more than 40%. All the rest of the free world (including Western Europe and Japan) accounts for only about 20%. The four CIPEC countries are the principal suppliers to Western Europe and Japan.

This pattern of highly concentrated supply is not unlike that for oil, although the U. S., which imports only 5% to 10% of its copper requirements, is more nearly self-sufficient in copper than in oil.

A different problem. After the 1973 Arab oil embargo and the subsequent sharp price boost, the public reaction was to anticipate that similar developments might occur in other basic commodities. In two commodity exchanges where copper is traded–London and New York–buyers eagerly absorbed all offerings. The prices in these open markets had been about 50¢ a lb. at the beginning of 1973. By April, 1974, they reached $1.50 a lb. in London.

But there are basic differences between oil and copper. Oil has shown a pattern of steady growth as world energy needs have risen at a rate exceeding population growth. Copper consumption rises sharply in periods of prosperity and dips sharply when business falters. This sensitivity to the business cycle arises from copper's dependence for its markets on durable consumer goods, construction, and industrial capital investments.

Once consumed, oil is not recyclable, with the exception of minor quantities of oil used in lubrication. Copper's uses, on the other hand, lend themselves to a high degree of recycling. Scrap currently accounts for roughly 40% of total U. S. supply.

The production of copper is more labor-intensive than that of oil. Thus, copper-exporting countries are not so free to restrict supplies by cutting back production, because to do this to any significant extent could cause serious unemployment and social unrest.

Equally important, the financial position of the governments of the copper-exporting countries is such that they must produce, export, and sell copper or face severe fiscal problems. The oil-exporting countries embarked on their price escalation from a strong financial position, and today their financial strength is formidable.

April, 1974, proved the high-water mark for the copper boom. The direct and indirect effects of the quadrupling of oil prices by the OPEC countries resulted in a sharp drop in demand for copper. The tide began to turn during the second quarter of 1974. Japan, experiencing severe economic dislocations caused by rampant inflation and the high cost of importing energy fuels, was the first place where this became evident.

Japanese copper consumption fell sharply, and Japanese buyers found that they had bought more copper than was needed. Japan, normally a net importer of refined copper, suddenly emerged as a net exporter, with a severe effect on prices.

In other countries, demand for copper also began to decline in mid-1974. One major influence in reduced use of copper was the sharp drop in sales of new automobiles worldwide. If fewer

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Technology has increased copper reserves by making it possible to use the lower grade ores

cars are built, less copper is needed for radiators, electrical systems, and hardware.

Concerned over the unexpected reversal in the copper market, the four CIPEC governments held meetings in Zambia, Peru, and France in June, October, and November. A fourth meeting was held in France this April. After the last two meetings, communiqués announced that the four participating governments had agreed to reduce shipments first by 10% and then by 15% from the level of mid-1974.

If the CIPEC authorities expected these moves to strengthen copper prices, they were doomed to disappointment. The price fell from 65¢ a lb. just prior to the November meeting to 57¢ a lb. by yearend. The probable surplus of supply over demand in 1974 is estimated at as much as 400,000 or 500,000 tons of copper.

This year, the price of copper has been 52¢ to 62¢ a lb., only slightly higher than it was at the end of 1973, while costs of producing copper have soared. Higher oil prices have played a major part in this increased cost, but wages, supplies, and transportation costs are also up.

It seems clear that copper exporters have many more obstacles to overcome than oil exporters in their attempts to establish market control—and that they have not done so.

The situation with other minerals and raw materials is similar to that of copper. On the whole, events of the last year do not support the thesis that raw-material-exporting countries can now unilaterally impose their will on raw-material-importing countries with respect to all commodities. The more successful the effort on a particular commodity basic to the industrial economy—such as oil—the more that success may militate against early similar success with other commodities. By drastically altering the world balance of trade, oil prices have contributed to a sharp decline in world industrial activity. This decline, in turn, impinges heavily on demand for other industrial commodities and thereby causes significant weakening of their prices.

Inevitable rises. Over the long run, will this situation change? Eventually attrition will cut down copper supply as mines are forced to close. Demand will reflect the general rate of industrial activity. Thus, in time, copper prices will rise to reflect higher costs. No one can overlook the fact that although known reserves of copper are large, it is—like oil—a wasting resource.

Some studies in recent years have suggested that the world's resources probably cannot support the present rates of economic and population growth much longer and that as materials become scarce—even without conscious collusion by materials producers—their prices are bound to rise in relative terms.

Certainly no one can gainsay that some nonrenewable resources will eventualiy become scarce. The question is how scarce and when. The painstaking study of the materials situation by the Paley Commission in the early 1950s forecast that U. S. domestic mine production of copper in the mid-1970s was unlikely to exceed 800,000 tons a year—whereas in fact the present domestic mine capacity is close to 2-million tons annually, and reserves are being steadily increased—thanks to technology that permits the mining of lower-grade ores.

Increased attention is being given to the potential of mineral deposits under the deep ocean. Legal and technological problems remain to be solved, but many knowledgeable experts believe these problems will be overcome.

In the case of at least two major metals—iron and aluminum—their abundance in the earth's crust is so great that it is difficult to envisage a time within many centuries when they will become scarce. And while oil resources are relatively limited, coal reserves plus resources of solar, thermal, and nuclear energy promise to provide adequate, although perhaps more costly, power for generations to come.

Bigger supplies. One other factor frequently overlooked is that the so-called nonaligned countries are actually less important sources of supply of most metals and minerals than the developed countries—if one ranks Australia, Canada, South Africa, and Poland as developed countries together with the U. S. and Russia.

To revert to the example of copper, Poland is now expanding its copper output to a level comparable to the scale of the CIPEC countries; Canada is a larger producer than either Chile or Zambia; and Australia and South Africa are both considerable sources. The U. S. remains by far the world's premier copper producer.

The developed countries, even though raw-material exporters, have shown no interest in joining exporter clubs modeled along OPEC lines. They have, however, indicated interest in participating in commodity agreements embracing both producers and consumers.

The International Tin Agreement, which has been in existence for about 20 years, represents the type of arrangement that is more likely to enlist their support. It includes a buffer-stock plan and provides for periodic reviews of minimum and maximum prices within which the buffer-stock plan operates. The Tin Agreement has been able to moderate price swings at times, but it has not been able to prevent occasional sharp fluctuations when the business cycle abruptly changes course.

On the whole, there appears to be little prospect of many successful duplications of the OPEC example in other commodities. The more likely prospect is that if prices are to be less subject to violent fluctuations, what will be needed is collaboration between producers and consumers—bilateral effort, not unilateral decree.

Drawings by Robert P. Van Nutt

AMC Proposes New Stockpile Formula

Simon Strauss, testifying on behalf of the American Mining Congress, details the extreme fluctuations in stockpile levels of selected minerals since enactment of the Stockpile Act of 1946

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AMC Proposes New Stockpile Formula

The Joint Congressional Committee on Defense Production held hearings Nov. 24 to investigate the sweeping revisions in objectives recently announced by the administration for items held in the national strategic stockpile.

The new policy has two parts. First, a new set of assumptions and a new methodology for calculating objectives, and second the annual revision of stockpile objectives to account for changes in the variety of economic and political factors. A new stockpile acquisition and disposal plan would be submitted annually to Congress for the necessary appropriations.

Testifying on behalf of the American Mining Congress was Simon Strauss, executive vice president of Asarco Inc. and chairman of the AMC Minerals Availability Committee. Strauss expressed the mining industry's support for the concept of a strategic stockpile but pointed out that the constant shift in objectives has caused the stockpile to be an extremely disruptive influence in the markets for metals and minerals.

He suggested that, if there is going to be a stockpile, perhaps objectives should be based on the actual record of imports of materials instead of assumptions. This would insure a gradual, rather than abrupt, alteration of stockpile objectives, resulting in reasonable stability and lower cost to the U.S. taxpayer. He also suggested that if Congress is unwilling to assume this responsibility, perhaps consideration should be given to a quasi-governmental agency similar to the Federal Reserve Board or Comsat to take over the policy functions. Strauss's full statement follows:

My name is Simon D. Strauss. I appear on behalf of the American Mining Congress, an organization representing the mining industry of the United States. I serve as chairman of the Committee on Minerals Availability of the American Mining Congress. In addition I am executive vice president of Asarco Inc., a large producer of metals and minerals.

I welcome the opportunity to discuss the new goals for strategic materials recently announced by the Federal Preparedness Agency. During the years 1941 through 1945, I served as an officer of the Metals Reserve Co., a subsidiary of the Reconstruction Finance Corp., which handled procurement of metals and minerals for the U.S. government throughout those difficult years. Following the end of the second World War, substantial quantities of materials were transferred to the strategic stockpiles by the Metals Reserve Co.

Since leaving government service, I have been continuously employed by Asarco. Because my responsibilities are concerned with the company's commercial activities, I have closely followed development of the stockpile program.

Stockpile Act passed in 1946

When World War II ended, the U.S. Administration, the Congress and the public at large all felt that the country's security had been imperiled during the war by prospective shortages of critical and strategic materials. To avoid similar jeopardy in future military emergencies, the Stockpile Act of 1946 was enacted without serious dissent.

This act created the ground rules for acquiring reserves of all materials deemed essential to the country's security. They were to be accumulated with public funds and to be used only to meet a serious national emergency. The executive departments of the government were to designate the materials and determine the quantities to be acquired. Congress appeared ready and willing to appropriate necessary funds.

Four years later, the Korean War broke out, just as the economies of the industrialized countries of Western Europe and Japan were being reestablished. A new materials crunch developed, further strengthening U.S. belief in the need for strategic stockpiles of critical materials.

The U.S. nonferrous mining industry did not actively promote stockpiles. The records of Congressional hearings and other governmental proceedings in the late '40s and early '50s show no evidence of a concerted mining lobby to create strategic stockpiles. The strongest public support for the stockpile concept came from the President's Material Policy Commission headed by William S. Paley of the Columbia Broadcasting System. Of his four associates on the commission, only one was a mining man. The commission studied materials problems in 1950 and 1951. Its voluminous report strongly endorsed stockpiles for security purposes as in the best interests of the nation.

Goals set without industry consultations

It should be emphasized that industry has never been

consulted in the establishment of stockpile goals for individual commodities. Until 1962, stockpile goals were treated as confidential information. Industry had no way of ascertaining either the goals or the quantities actually held by the government. We knew only that the goals were arrived at on the basis of elaborate calculations by representatives of a number of government departments—including Defense, Interior, State, Treasury and Commerce. Assumptions were made as to the prospective duration of a military conflict, the degree of security of certain sources of imported supplies, the likely nature of the conflict itself, the extent of essential civilian needs as well as military needs and similar matters.

In the early '60s, President Kennedy concluded that the stockpile objectives had been set at too high a level. Many objectives were sharply reduced in 1963 and some completely eliminated. Extensive hearings were held under the chairmanship of Senator Symington as to the operations by which the stockpiles had been accumulated. Legislative proposals were put forward for disposal of stockpile materials surplus to the new goals and a process of liquidating the stockpiles began.

Stockpile metals sold during Viet Nam War

During the Viet Nam War, with demand soaring, substantial amounts of metals were sold by the stockpile authorities. Arrangements were made to liquidate most of the aluminum stockpile. Sales of copper were made at the direction of President Johnson at a time when he felt that copper producers had unjustifiably increased the domestic price from 36¢ to 38¢ a pound. At that time, although the market price outside the United States was in excess of 50¢ a pound, domestic producers did roll their prices back to the 36¢ level in response to the President's action.

This particular occurrence confirmed an impression held in the mining industry that stockpiles might be used for purposes other than strictly military reasons—i.e. to influence prices.

Ironically, some years later a government investigation of the copper industry's pricing practices castigated the copper producers for selling at alleged administered prices and suggested instead that copper should be sold on the basis of prices prevailing on commodity exchanges.

Had this practice been in effect in 1965, when President Johnson was exercised about the 2¢ increase in the domestic price, consumers would have in fact paid much higher prices.

Reduced objectives announced in 1973

In early 1973 President Nixon announced another new approach to stockpile objectives.

He stated that a one-year target would be adequate for stockpile goals because a military conflict was unlikely to last longer than one year. In the unlikely event of a longer interruption, he declared that the country's security could be protected adequately either by substitution of other materials or increases in production. Under these new definitions the stockpile target for many commodities was reduced to zero.

President Nixon clearly indicated that he hoped to use

stockpile sales as a means of keeping prices down in a period of rampant inflation. It seemed probable then that another, although unstated, reason was the desire to raise revenue to help balance the budget.

The new Nixon policy disregarded past experience with respect to substitution of one material for another under emergency circumstances. In a complex technological society, substitutions can and have occurred but long lead times are required to permit retooling. As for expansion of mineral production, this can rarely be accomplished in less than two years and a normal project is likely to require at least three to five years for completion.

Congress apparently shared industry's misgivings with respect to the adequacy of the Nixon program and the new stockpile surpluses it created. Efforts by the administration to obtain Congressional approval for disposal of materials from the stockpile were blocked on a number of occasions by requests from the legislature for additional information as to the adequacy of the new stockpile goals.

The new goals on which you are holding hearings are, in effect, the outgrowth of these misgivings. The official statement made in October by the Federal Preparedness Agency declares that the materials stockpile should be capable of supporting U.S. defense requirements during a major war, over a three-year period, assuming large scale industry mobilization and providing for a broad range of basic civilian economic needs.

Industry supports strategic stockpile concept

The mining industry strongly supports the concept of a strategic stockpile. However, the constant shift in stockpile goals has caused the stockpile to be an extremely disruptive influence in the markets for metals and minerals. To cite an example, during the 1950's the stockpile acquired 1,900,000 tons of aluminum. This large purchase program caused expansion in the capacity of the aluminum industry over and above what was necessary to meet normal market requirements.

In 1963 the aluminum stockpile goal was sharply reduced and in 1972 it was completely eliminated. All the aluminum in the stockpile has been resold—principally through the companies that had originally supplied metal to the government. This obligation to buy back metal tended to inhibit normal expansion of aluminum capacity during the '60s and early '70s just as expansion in the '50s had been overstimulating. Thus, the government's complete about-face in regard to stockpile requirements for aluminum played a significant role in the unsatisfactory price/cost relationships that have prevented the aluminum industry from earning a fair return on invested capital during much of the last 25 years.

New goals look illogical

In the light of this past experience with shifting targets, the mining industry approached the new goals with considerable skepticism. When the new figures are examined, some of them seem illogical.

The mining industry does not pretend to forecast or make assumptions about duration of military conflicts. We only know that the three most recent major military

operations in which this country has been involved have all been longer than three years—that is to say, the second World War, the Korean War and the Viet Nam War. Various assumptions have been made as to direct military requirements, indirect military requirements and essential civilian needs. In our judgment, these are simply assumptions. The complex interrelationships that exist in an industrialized economy such as that of the United States do not readily fall into such distinct watertight compartments. A material which is not used in munitions or armaments may, nevertheless, be absolutely essential to the prosecution of a military effort.

I have said that the new stockpile goals appear to be illogical. Let me illustrate this rather strong statement by examining the new goals for two major metals—copper and tin.

The previous stockpile goal for copper under the Nixon directive of 1973 was set at zero. The new objective is 1,299,000 tons.

Of all major metals, the United States is most nearly self-sufficient with respect to domestic supplies of copper. This is in contrast with the position in steel, aluminum, lead, zinc, nickel and tin. In the five years, 1971 to 1975 inclusive, net imports of copper averaged 209,000 short tons a year—this represents about 10 percent of the annual consumption of primary refined copper in this country. The new stockpile objective is, therefore, equivalent to average net imports in 1971–1975 of primary copper for 6-1/2 years. There has been a sharp increase in imports in 1976, largely the result of heavy shipments from Zambia—a country that has not previously been a significant supplier to this market. The increase this year, however, should not be regarded as representing greater U.S. dependence on imports but rather as a consequence of Zambian desire for funds at a time when its normal European outlets are depressed.

Tin needs met through imports

In the case of tin, the United States has virtually no domestic sources of supply. It must import all of its needs for primary tin and these imports come largely from overseas developing nations. Under the previous one-year program, the stockpile objective for tin had been set at 40,500 long tons. Under the new program for a three-year period the stockpile objective is reduced to 32,499 tons. During the five years 1971–1975, net imports of primary tin averaged 46,700 tons per year. Imports would have been even greater had there not been heavy stockpile sales during this period. Therefore the new objective is equivalent to about an eight-month coverage of U.S. import requirements for a metal which this country does not itself produce.

The copper industry is currently experiencing de

Stockpile Objectives for Selected Minerals over th

Commodity	Date of objective	Amount	
Alumina	Oct. 1, 1976	11,532,000	short tons
Aluminum	Nov. 17, 1949	250,000	short tons
	Nov. 2, 1950	700,000	
	July 17, 1952	2,000,000	
	Aug. 3, 1954	2,500,000	
	Nov. 1, 1955	2,000,000	
	Nov. 8, 1956	2,000,000	
	June 30, 1958	290,000	
	Nov. 4, 1959	1,200,000	
	June 17, 1963	450,000	
	Dec. 20, 1972	0	
	Apr. 12, 1973	0	
	Oct. 1, 1976	0	
Bauxite			
Metal grade, Jamaica type	Aug. 3, 1954	2,800,000	long dry tons
	Sept. 29, 1954	2,900,000	
	June 30, 1958	2,300,000	
	Nov. 4, 1959	2,600,000	
	Apr. 10, 1964	5,000,000	
	Apr. 12, 1973	4,638,000	
	Oct. 1, 1976	523,000	
Metal grade, Surinam type	Nov. 20, 1944	4,400,000	long dry tons
	Apr. 6, 1950	3,250,000	
	Oct. 26, 1950	3,900,000	
	July 26, 1951	5,000,000	
	Aug. 3, 1954	5,000,000	
	Sept. 29, 1954	12,500,000	
	June 30, 1958	7,300,000	
	Nov. 4, 1959	6,400,000	
	Apr. 10, 1964	5,300,000	
	Apr. 12, 1973	0	
	Oct. 1, 1976	0	
Refractory grade	Oct. 26, 1950	378,000	long dry tons
	Dec. 28, 1950	306,000	
	July 26, 1951	300,000	
	Sept. 28, 1954	300,000	
	June 30, 1958	85,000	
	Nov. 4, 1959	137,000	
	Apr. 10, 1964	173,000	
	Apr. 12, 1973	0	
	Oct. 1, 1976	2,083,000	
Chromite			
Chemical	Oct. 1, 1976	734,000	short tons
Metallurgical ore	Nov. 20, 1944	2,352,000	short dry tons
	Dec. 2, 1949	3,584,000	
	Dec. 18, 1952	3,360,000	
	Sept. 29, 1954	6,160,000	
	June 30, 1958	3,416,000	
	Dec. 11, 1959	2,700,000	
	July 18, 1963	2,970,000	
	Mar. 27, 1964	2,970,000	(amended)
	May 13, 1969	3,650,000	
	Mar. 4, 1970	3,100,000	
	June 9, 1971	3,086,800	
	Jan. 16, 1973	2,910,550	
	Apr. 12, 1973	444,710	
	Oct. 1, 1976	2,550,000	
Refractory	Oct. 1, 1976	642,000	short tons gross weight
Chromium			
Ferro high carbon	Prior to 1973, the objective was part of the objective for metallurgical chromite		
	Jan. 16, 1973	70,500	short tons
	Apr. 12, 1973	11,476	
	Oct. 1, 1976	236,000	
Ferro low carbon	Prior to 1973, the objective was part of the objective for metallurgical chromite		
	Jan. 16, 1973	70,500	short tons
	Apr. 12, 1973	11,476	
	Oct. 1, 1976	124,000	
Ferro, silicon	Oct. 1, 1976	69,000	short tons
Metal	Oct. 1, 1976	10,000	short tons
Copper	Nov. 20, 1944	1,250,000	short tons
	June 22, 1950	1,250,000	
	Oct. 26, 1950	2,100,000	
	Sept. 5, 1952	1,100,000	
	Aug. 31, 1954	1,600,000	
	Sept. 28, 1954	3,500,000	
	June 30, 1958	1,900,000	
	Mar. 18, 1959	1,000,000	
	June 17, 1963	775,000	
	Mar. 13, 1964	775,000	
	Apr. 12, 1973	0	
	Oct. 1, 1976	1,299,000	
Lead	Nov. 20, 1944	1,100,000	short tons
	June 1, 1950	515,000	
	Nov. 9, 1950	700,000	
	Feb. 24, 1953	700,000	
	Sept. 28, 1954	1,130,000	
	Oct. 26, 1954	1,130,000	
	Nov. 8, 1956	1,154,000	
	May 3, 1957	1,154,000	
	June 30, 1958	286,000	
	June 17, 1963	0	
	Dec. 3, 1969	530,000	
	Apr. 12, 1973	65,100	
	Oct. 1, 1976	865,000	
Manganese			
Battery grade natural ore	Nov. 20, 1944	168,000	short dry tons
	Feb. 1, 1951	257,600	
	July 12, 1951	203,840	
	Nov. 8, 1951	190,400	
	Sept. 28, 1954	375,917	
	Oct. 26, 1954	144,480	
	June 30, 1958	82,320	
	July 1, 1959	80,000	
	Feb. 3, 1964	60,000	
	Mar. 13, 1964	80,000	
	May 13, 1969	135,000	
	Apr. 12, 1973	10,700	
	Oct. 1, 1976	12,736	
Battery grade synthetic dioxide	Oct. 26, 1954	29,120	short dry tons
	June 30, 1958	12,768	
	July 1, 1959	20,000	
	Mar. 13, 1964	6,700	
	Mar. 27, 1969	1,900	
	Apr. 12, 1973	0	
	Oct. 1, 1976	19,105	
Chemical grade-type A	Jan. 26, 1950	17,248	short dry tons
	Oct. 26, 1950	57,120	
	July 12, 1951	30,240	
	June 19, 1952	25,760	
	Sept. 28, 1954	63,314	
	Jan. 18, 1955	47,040	
	June 30, 1958	28,000	
	July 1, 1959	30,000	
	Apr. 2, 1964	68,500	
	May 13, 1969	35,000	

pressed prices. Large stocks of copper have been accumulated in the warehouses of the London Metal Exchange and the New York Commodity Exchange. A government purchasing program which would absorb these stocks would be extremely helpful to copper producers at this time.

Still, one must wonder how the national interest can be served by accumulating a reserve equivalent to 6-1/2 years of imports of a metal in which this country is 90 percent self-sufficient while holding a reserve equivalent to only eight months' supply of a metal for which this country is totally dependent on imports from overseas sources.

The argument might be made that tin is not an important factor in the military effort. The largest single use of tin is in the production of tinplate and the largest use of tinplate is for the packaging of food. Substitute materials, such as aluminum, glass and plastics, can be used as food containers under certain circumstances but neither the container nor the food processing industry could accomplish such substitution in a short period of time.

There is a serious risk that a shortage of tinplate could cause enormous dislocations in the distribution of food supplies during a military conflict. One must assume that feeding not only the military forces but the general population is an essential part of any war effort. The new goal for tin seems clearly inadequate.

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Silver objective eliminated

I have discussed copper and tin in some detail. One could raise similar questions with regard to the new objectives for other materials—for example, the complete elimination of a stockpile objective for silver, a metal which has high technology applications in the photographic and electrical industries and which during World War II was used in enormous quantities. The U.S. imports well over half of its silver requirements currently. It is true that there are large stocks of silver in this country but these stocks are privately held. Under wartime conditions, if the government is prepared to expropriate private holdings of silver at predetermined prices, a procedure which would hardly be compatible with democratic principles, the likelihood is that prices for silver would rise very sharply.

This brings up one of the most troublesome aspects of the constant shifting in stockpile objectives—namely, that by liquidating holdings in the past at low prices, the government is now faced under the new program with the cost of replacing metal at far higher prices.

Copper objective changed 11 times since 1944

Submitted with this statement is a tabulation of

of the National and Supplemental Strategic Stockpiles

Manganese	Apr. 12, 1973	12,800	
	Oct. 1, 1976	247,136	
	(combined total—Type A & B)		
Chemical grade-type B	June 19, 1952	15,680	short dry tons
	Jan. 18, 1955	40,320	
	June 30, 1958	24,640	
	July 1, 1959	53,000	
	Apr. 2, 1964	64,000	
	May 13, 1969	35,000	
	Apr. 12, 1973	12,800	
	Oct. 1, 1976	247,136	
	(combined total—Type A & B)		
Electrolytic metal	Jan. 16, 1973	9,000	short tons
	Apr. 12, 1973	4,750	
	Oct. 1, 1976	15,000	
Ferro high carbon	Jan. 16, 1973	600,000	short tons
	Apr. 12, 1973	200,000	
	Oct. 1, 1976	439,000	
Ferro low	Oct. 1, 1976	0	carbon
Ferro medium carbon	Jan. 16, 1973	36,000	short tons
	Apr. 12, 1973	10,500	
	Oct. 1, 1976	99,000	
Metallurgical	Nov. 20, 1944	5,264,000	short dry tons
	Dec. 2, 1949	5,600,000	
	July 12, 1951	5,600,000	
	Oct. 11, 1951	5,600,000	
	July 17, 1952	5,600,000	
	Aug. 31, 1954	8,848,000	
	June 30, 1958	5,376,000	
	Oct. 16, 1959	6,800,000	
	Feb. 13, 1964	7,900,000	
	Mar. 13, 1964	7,900,000	
	May 1, 1964	7,900,000	(amended)
	May 13, 1969	4,000,000	
	Apr. 12, 1973	750,500	
	Oct. 1, 1976	2,052,000	short tons
Ferrosilicon	Jan. 16, 1973	45,500	short tons
	Apr. 12, 1973	15,900	
	Oct. 1, 1976	81,000	
Nickel	Nov. 20, 1944	118,000	short tons
	July 1950	274,000	
	Nov. 1950	290,000	
	Oct. 9, 1952	450,000	
	Sept. 28, 1954	450,000	
	Feb. 8, 1955	335,500	
	June 30, 1958	161,500	
	July 18, 1963	50,000	
	Jan. 13, 1967	20,000	
	Mar. 13, 1969	55,000	
	Feb. 9, 1971	0	
	Apr. 12, 1973	0	
	Oct. 1, 1976	204,335	
Platinum Group			
Iridium	Nov. 20, 1944	5,000	troy oz
	July 20, 1951	13,000	
	Sept. 28, 1954	13,000	
	May 16, 1956	4,500	
	Nov. 8, 1956	4,500	
	June 30, 1958	1,500	
	Feb. 16, 1960	4,000	
	Apr. 2, 1964	17,000	
	Apr. 12, 1973	1,800	
	Oct. 1, 1976	97,761	
Palladium	May 16, 1956	475,000	troy oz
	June 30, 1958	330,000	
	Feb. 16, 1960	340,000	
	Apr. 2, 1964	1,300,000	
	Jan. 9, 1973	510,000	
	Apr. 12, 1973	328,500	
	Oct. 1, 1976	2,450,000	
Platinum	Nov. 20, 1944	275,000	troy oz
	Nov. 2, 1950	590,000	
	Aug. 2, 1951	790,000	
	Sept. 28, 1954	879,750	
	May 16, 1956	235,000	
	Nov. 8, 1956	235,000	
	June 30, 1958	154,000	
	Feb. 16, 1960	165,000	
	Apr. 2, 1964	450,000	
	Jan. 5, 1967	335,000	
	May 13, 1969	555,000	
	Apr. 12, 1973	187,500	
	Oct. 1, 1976	1,314,000	
Silver	June 3, 1965	165,000,000	troy oz
	Mar. 4, 1970	139,500,000	
	Apr. 12, 1973	21,663,000	
	Oct. 1, 1976	0	
Tin	Nov. 20, 1944	210,000	long tons
	Dec. 2, 1949	260,000	
	Jan. 26, 1950	285,000	
	Nov. 30, 1950	350,000	
	June 28, 1951	245,000	
	Sept. 28, 1954	308,000	
	Mar. 22, 1955	341,000	
	June 30, 1958	198,000	
	July 7, 1960	185,000	
	May 20, 1963	200,000	
	July 26, 1963	200,000	
	Mar. 27, 1969	232,000	
	Apr. 12, 1973	40,500	
	Oct. 1, 1976	32,499	
Tungsten			
Ores and concentrates	Nov. 20, 1944	36,000,000	lb
	Feb. 18, 1949	85,000,000	
	July 20, 1950	114,000,000	
	Nov. 30, 1950	146,000,000	
	Jan. 7, 1953	140,000,000	
	Sept. 29, 1954	94,000,000	
	June 30, 1958	49,200,000	
	Nov. 4, 1959	50,000,000	
	Apr. 2, 1964	44,000,000	
	Mar. 4, 1970	60,000,000	
	Apr. 12, 1973	4,234,000	
	Oct. 1, 1976	8,823,000	
Carbide powder	Oct. 1, 1976	12,845,000	lb
Ferro	Oct. 1, 1976	17,769,000	lb
Metal powder	Oct. 1, 1976	3,290,000	lb
Zinc	Nov. 20, 1944	1,500,000	short tons
	July 6, 1950	1,500,000	
	Dec. 7, 1950	1,500,000	
	Jan. 4, 1951	780,000	
	July 12, 1951	740,000	
	Oct. 16, 1952	740,000	
	Apr. 30, 1953	740,000	
	Aug. 3, 1954	1,100,000	
	Nov. 8, 1956	1,250,000	
	May 3, 1957	1,250,000	
	Mar. 20, 1958	1,256,000	
	June 30, 1958	178,000	
	June 17, 1963	0	
	Dec. 3, 1969	560,000	
	Apr. 12, 1973	202,700	
	June 15, 1976	374,830	
	Oct. 1, 1976	1,313,000	

changes in the objectives for many of the important metals and minerals over the life of the stockpiling program.

For example, in the case of copper, the original objective of 1,250,000 tons set on Nov. 20, 1944, has been changed no less than 11 times. Now the goal is back to 1,299,000 tons. At one time the stockpile held something in excess of 1,100,000 tons—all of which has been sold during the '60s and early '70s.

In the case of tin, the original objective was 210,000 tons and it has been changed 13 times and is now 32,499 tons.

Comparable fluctuations have occurred with respect to the other major metals and minerals. I will not recount them now but I would particularly suggest that the committee direct its attention to the changes in objectives for metallurgical chrome, platinum and palladium. The major sources of these three highly important industrial materials are in southern Africa and the Union of Soviet Socialist Republics. It seems almost redundant to point out the possibility of large-scale civil war in southern Africa would cut off access to supplies of these three elements from that continent, leaving the United States largely dependent on the Soviet Union for its feed stocks of these essential raw materials.

Targets based on import record suggested

The mining industry would like to submit a suggestion to the Congress for its consideration with respect to stockpile objectives. The experience of the last 30 years indicates that placing this responsibility within the executive department has resulted in frequent shifts of objectives based on considerations other than the country's security. If the Congress believes that there is value in having a reserve of materials to insure the nation's continued defense capability in times of emergency, perhaps it should consider a formula that would not be based on assumptions but rather on actual experience. The figures on foreign trade compiled by the Bureau of the Census clearly show the extent of U.S. dependence on imports of strategic materials. Although some parts of the public may believe that certain minerals and metals are primarily used for military purposes and others are primarily used for peacetime purposes, actual experience shows that the major materials are equally vital to the nation whether in war or in peace.

Why not then set the targets based on the actual record of imports of these materials? If the objective is protection against a three-year emergency, a stockpile objective equivalent to three years' imports would not be unreasonable.

As time goes on conditions do change. Domestic sources of supply may be developed in which case U.S. imports will diminish. If domestic sources become depleted or marginal, U.S. imports will expand. By a periodic review of the import record, stockpile objectives would gradually be altered but they would not change from a minimum of zero to a maximum of 3,500,000 tons as has been the case with the copper stockpile goals.

Reasonable stability in stockpile objectives will mean a lower cost to the U.S. taxpayer than has been the case with the frenetic activity in buying and selling materials which has been observed in the last 30 years. It will also mean that the stockpile will not interfere with the normal operations of the market in the unfortunate way that has been the case in recent years.

Every transaction affects market

The present stockpile law instructs the administration to minimize market disruption in its programs of purchasing and selling strategic materials. The General Services Administration has certainly made every effort to minimize such disruptions. Nevertheless, the fact remains that every transaction affects the market—every purchase adds to the demand; every sale adds to the supply. Of course, there have been some cases where the stockpile has been deliberately used to affect markets—as in the cases of aluminum and copper already cited.

When the stockpile program was initiated, the mining industry expressed concern that the stockpiles might prove to be a "Sword of Damocles" hanging over its head. Unfortunately, events have proved these fears were justified.

We ask you now in considering the new stockpile objectives submitted to you by the administration to give serious study to a drastic change in the method of establishing stockpile goals. We urge the Congress to give thought to enacting legislation directing the administration to a stockpile program in which the goals will be directly related to the degree of U.S. import dependence as shown by facts—not assumptions. And perhaps, if Congress itself is unwilling to assume the direct responsibility for enunciating the principles on which stockpile targets will be set, consideration should be given to a quasi-governmental agency similar to the Federal Reserve Board or Comsat to take over the policy functions. The mining industry feels strongly that 30 years of constant shifting of stockpile goals indicates the need for a new approach, divorced as far as possible from short-term political or financial considerations.

Following Strauss' testimony, Sen. Proxmire asked Strauss if he would agree to representation of all viewpoints on the quasi-public corporation he had suggested to run the stockpile. Strauss replied affirmatively, but Sen. Proxmire expressed concern that this might not be realistic since we would be getting into the situation of managing the economy. Strauss reiterated his view that industry should be consulted on some aspects of stockpile policy apart from defense considerations.

Asked how the new objectives would affect the mining industry, Strauss replied that it would put pressure on price and that this would be in an upward direction. The new goals will affect the markets, he said. Strauss was questioned as to why an import figure would be a good indicator for stockpile objectives since uses of various materials would probably rise in a wartime situation. Strauss pointed out that he felt it was a valid indicator since, in his experience, uses for various minerals had changed but the volume remained fairly constant between a wartime and peacetime economy.

Sen. Proxmire asked if the mining industry had received benefits from the stockpile program, to which Strauss replied that the only instance he could recall where it had benefitted the industry was in the mid-1950's when the federal government purchased lead and zinc from what was then a struggling industry. The biggest effect, he said, has been from disposals in the 1960's and 1970's whereby the stockpile was used to keep down prices of minerals. "We don't want 'benefits' if a new set of definitions makes stockpile materials surplus." Most in the mining industry would prefer no stockpile, said Strauss, but national security considerations make it imperative that it be maintained.

In closing the hearings, the Senator stated that he felt there was reason for concern over the newly established stockpile policy. He recounted "horror" stories from the past program and stated there was always the possibility of corruption in stockpile dealings. He expressed concern with the lack of information available from the General Services Administration and the lack of challenge of the credentials of those who had determined the new objectives.

Appendix H

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Competition in the Non-Ferrous Metal Markets

by

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ABSTRACT

Because of the huge investments now necessary to create an integrated enterprise in the non-ferrous metals industry, there is a widespread impression that competition in non-ferrous metals is being increasingly restricted. This paper examines the history of the five major non-ferrous metals in the period 1970 to 1975. The study shows that for each of these five metals -- aluminum, copper, zinc, lead and nickel -- there is today a larger number of significant producers and the geographic spread of sources of these metals has been substantially increased.

This paper concludes with the concept that metal prices will continue to be determined by the forces of supply and demand but that because of inflation in the cost of bringing in new projects, prices will tend to rise as demand increases. Thus the possibility looms that there will be a lag in expanding capacity with the consequence that periodic shortages can be expected in times of high economic activity. To repeat, shortages will be due to bottlenecks in capacity -- not to shortage of known reserves. For each of these five metals there are known deposits, as yet unexploited, with reserves adequate to meet probable expansion in demand over the balance of the century.

Government officials, professional economists and the public at large in recent years have visualized the non-ferrous metal markets as economic areas in which competition is dominated by a few large monolithic sellers. Government officials -- particularly those charged with the enforcement of the laws regarding competition -- sniff the air at frequent intervals for scent of monopoly. Professional economists refer to the non-ferrous metal markets as oligopolistic, a word with dark semantic overtones of undesirable dominance. And the public is admonished by consumer advocates that they are being exploited unfairly by a few huge greedy corporations that manipulate prices in their own interest.

How accurate is this view? Is it true that the number of sellers is diminishing as the large producers force the small ones out of the market? To answer these questions the record of the last twenty-five years has been examined. By fortunate coincidence a monumental study of the resource industries of the United States was published in 1951 -- the report of the President's Materials Policy Commission, the so-called Paley Report. It took a forward look at the quarter-century from 1950 to 1975, analyzed each of the leading resource industries, and made

some forecasts as to the production and consumption of each of the principal materials.

This paper will deal with the five non-ferrous metals that rank highest in tonnage and value -- aluminum, copper, zinc, lead and nickel.

Before examining these commodities individually, some general observations appear to be in order. The non-ferrous metals are highly capital-intensive industries. Under today's conditions, to be an integrated producer of any one of them requires an investment of hundreds of millions of dollars.

Those who like to remember the good old days will hark back to the period a hundred years or so ago when the great wide open spaces of the West were being explored and populated by the white man, when the rich bonanza discoveries of California, Arizona, Montana, Idaho, Colorado and Nevada brought overnight wealth to the skilled or lucky prospector. Mines were opened from the grassroots then and the number of individual operations was very large. Why can't it be like that now?

For the obvious reason that the surface of this country -- and of most others for that matter -- has been scoured by professionals. The chances of finding a rich surface outcrop are minimal. This is not to say that new finds are not being made -- on the contrary in the detailed references to the individual metals, numerous examples will be cited of major finds. But these discoveries are of deposits that for the most part are hidden from the naked eye. They have been made as a result of tenacious geological deductions -- and at great expense. The lone prospector with burro and pick-axe is unlikely to spot them, although the rare exception does occur. Today exploration is a team effort using the tools of modern man -- costly tools.

Moreover most of the new discoveries are large tonnage and low-grade -- not small tonnage and high grade as was the case in the last half of the nineteenth century. It is worth noting, furthermore, that a single large mine -- a Chuquicamata, Bingham Canyon, or Timmins will alone produce as much copper or zinc in a single year as the whole world produced in a single year during the eighties and nineties of the last century.

There still are small mines. Some of them will grow into big mines. Others will remain small. If conditions are sufficiently favorable in terms of ore grade, ease of extraction, and proximity to processing capacity, small mines may remain active and profitable producers of metal contained in concentrates for scores of years. But the bulk of the world's requirements of non-ferrous metals must come from the big-tonnage, low-grade, capital intensive operations. That phrase "capital-intensive" has been repeated advisedly -- because in today's market it is this characteristic of the industry that must be accepted by any one who makes a serious study of its market structure. If metals are to be made available to mankind at minimum cost, huge amounts of capital must be marshalled to bring the metal content of low-grade deposits to the marketplace.

Given this enormous requirement for investment, it would not be surprising if the number of major producers of metals had tended to diminish in the last quarter century. Yet, as will be shown, precisely the opposite has happened. There are more active sellers of each of these five metals today than there were 25 years ago. More countries are today significant sources of these metals than was the case when the Paley study was made. The competition within the market for each of these metals is keener as a consequence. And, in addition and not to be overlooked, the competition in the marketplace for applications among the metals has greatly intensified.

Throughout this study the data for production are stated in short tons. The figures for world output do not include Russia, China, North Korea, or the Communist countries of Eastern Europe. The one exception is Yugoslavia which has published data throughout this 25-year period. While "guesstimates" have been published for the other countries and Poland is now reporting statistics on a regular basis, on the whole it seemed advisable to exclude these "centrally planned economies" from the totals, except for Yugoslavia. That country is engaged in extensive trade in metals with Western Europe and the United States. To include it in a study of the changes that have occurred therefore appears appropriate.

It is time now to take a look at the individual commodities. In doing so the comparison is between the year 1950, which is the year when the Paley Commission Study was started, and either the year 1973 or 1974. The Paley projections were for the quarter century to 1975, but 1975 was a year of recession and restriction in production for all metals. The peak production for all five of these metals was reached either in 1973 or 1974 and, therefore, it seems appropriate to indicate the changes that have occurred between the year 1950 and the best year thus far in this decade.

Aluminum is the metal with the largest volume of production in the non-ferrous industry. In the year 1950 the world production of aluminum was approximately 1,350,000 tons. Of this, 719,000 tons was produced in the United States

and 397,000 tons in Canada. Thus these two countries accounted for approximately 80% of the world supply.

Only two other countries outside the "centrally planned economies" produced as much as 50,000 tons of aluminum in 1950 -- France with 67,000 tons and Norway with 52,000 tons.

Three companies -- Alcoa, Reynolds and Kaiser -- accounted for the entire U. S. production with about half of the total being produced by Alcoa. The two other companies were each responsible for about one-quarter of the U. S. output. The entire Canadian production came from a single producer -- Alcan. In 1950 the U. S. imported 176,000 tons of aluminum and exported less than 1,000 tons. The bulk of the imports came from Canada. Thus it is a fair conclusion that the U. S. market in primary aluminum in 1950 was dominated by four sellers. Before World War II there had been only two major sellers -- Alcoa and Alcan -- although some metal of European origin was imported into this country.

The peak production of aluminum in this decade was in 1974 when the U. S. produced 4,903,000 tons. World output outside the "centrally planned economies" amounted to 12,167,000 tons. You will note that the U. S. production had expanded almost seven-fold but its share of the world total had slipped from well over half to about 40%.

Outside the United States the largest producer of aluminum was Japan with an output of 1,239,000 tons while Canada produced 1,110,000 tons.

Thirteen countries in Western Europe each produced over 100,000 tons of metal -- Germany with 759,000 tons and Norway with 731,000 tons being the leaders. In addition to Western Europe and Japan, there were significant producers of aluminum in Australia, India, Ghana, New Zealand and Bahrain -- each of which had an output of over 120,000 tons of aluminum. Thus each of these countries had production in 1974 roughly equivalent to 10% of what the whole world had produced in 1950. Within the United States where three companies had produced aluminum in 1950, twelve companies were producing aluminum in 1974. These twelve companies operated a total of 32 plants.

Alcoa was still the largest single producer of aluminum in the United States in 1974, but its share of the market had fallen to somewhat less than one-third. On a capacity basis, Reynolds had 19% and Kaiser 14%. More than one-third of the capacity in the United States was in the hands of the nine new companies in the field -- Alumax, Anaconda, Conalco, Howmet, Martin Marietta, National Southwire, Noranda, Ormet and Revere. There were two producers in Canada, 29 separate corporate producers in Europe and five producers in Japan.

The U. S. imported 508,000 tons of aluminum in 1974 but it exported 208,000 tons. The foreign producers competed with the 12 domestic producers in the U. S. market and the U. S. producers had a significant outlet for a share of their production outside this country.

If one looks beyond aluminum at bauxite, the industry's basic raw material, a similar proliferation of sources has developed.

In 1950 bauxite requirements of the Canadian and U. S. aluminum industries were met from three sources -- the United States itself, British Guiana, now called Guyana, and Surinam. Europe's requirements were met primarily from France and Hungary and the only substantial producer in Africa and Asia was Indonesia. Neither Jamaica nor Australia produced bauxite in 1950.

In 1974, of a world production outside the Communist sphere of 78,000,000 tons, Australia accounted for 22,000,000 tons and Jamaica for 16,800,000 tons. Thus these two countries, which had not produced in 1950, accounted for half the 1974 world's supply outside the Communist Bloc. U. S. production was approximately the same in 1974 as in 1950 but because of the enormous expansion in its metal production U. S. dependence on imports had increased dramatically. Jamaica was the largest single source for this country in 1974 but there were a number of other major sources. Guyana and Surinam continued to be significant producers yet both of them had been outstripped by a new African source -- the Republic of Guinea. Greece, which in 1950 had only a very limited production, now rivals France as the largest source on the European continent. The Dominican Republic, India and Malaysia are other substantial producers. Brazil is expected shortly to be in the first rank among world bauxite sources.

Because of metallurgical problems not all bauxite is freely interchangeable. Nevertheless, few industries have undergone such a major change with respect to the geographical source of significant productions as has the bauxite industry.

The copper industry in 1950 was highly concentrated. Seven companies operating in six different countries were major miners of copper in the Free World. These seven companies were Anaconda, operating in the United States, Mexico and Chile; Kennecott, operating in the United States and Chile; Phelps Dodge, operating in the United States alone; Rhodesian Selection Trust, operating in what was then known as Northern Rhodesia; Rhodesian Anglo-American, also

operating in Northern Rhodesia; Union Miniere, operating in what was then known as the Belgian Congo; and International Nickel, operating in Canada. The seven companies had an aggregate production of 1,710,000 tons in 1950, roughly 67% of the world production of 2,535,000 tons.

Within the United States the three major companies -- Kennecott, Phelps Dodge and Anaconda -- produced 713,000 tons or 78% of the country's total mine output of 915,000 tons.

The copper industry's 1974 figures are not representative because a strike occurred in the United States during the third-quarter and business activity declined sharply in the second-half of that year. Therefore, 1973 is a more significant year to compare with 1950. Free World mine production of copper in 1973 had risen to 6,664,000 tons of which 1,718,000 tons was mined in the United States. The increase in world production was 161% while the increase in U. S. production was 88%. As production rose, the number of organizations involved in mine production increased significantly.

The Anaconda and Kennecott properties in Chile were taken over by the Chilean government in two stages -- partially under President Frei and then completely under President Allende. The 1973 mine production was in the hands of the government-owned Corporacion del Cobre, which thereby became the world's largest single producer and seller of copper. In addition to the Anaconda and Kennecott mines it also acquired the Andina mine developed by Cerro Corporation in the late '60s.

The independent government of Zambia now rules in the former British colony of Northern Rhodesia. A majority ownership in both large mining enterprises in Zambia was held in 1973 by the Zambian government under the corporate titles of Roan Consolidated and Nchanga Consolidated.

The independent Republic of Zaire has succeeded the Belgian Congo and the Union Miniere mines there have been taken over by a Zairean company, Gecamines.

International Nickel continued to produce copper in Canada but whereas its 1950 production accounted for about 40% of the national total, in 1973 INCO's output of 173,000 tons was less than 20% of the Canadian production of 908,000 tons. No other single operation in Canada produced as much as 100,000 tons in 1973 but the aggregate output of the Noranda group, including Gaspe, GECO, Noranda itself and a number of operations in British Columbia in the aggregate accounted for a very substantial tonnage. Hudson Bay was a large producer in Canada both in 1950 and 1973. Canadian companies that produced no copper in 1950, but that had very substantial productions in 1973, included Bethlehem Copper, Craigmont, Texasgulf, Falconbridge Copper, Gibraltar, Lornex and Utah Mines Ltd.

In the United States the three major producers who had mined 701,300 tons in 1950 had an aggregate 1973 output of 992,000 tons.

But there were six other companies that had become substantial miners. Magma Copper, which operated a small mine in Arizona in 1950, had developed into a major source. Its mine output in 1973 was 168,000 tons. The Duval Company, which mined no copper in 1950, produced over 130,000 tons in 1973 from four mines. Asarco, which operated no U. S. copper mines in 1950, had a 1973 mine output of 75,000 tons from four mines. Cyprus at Pima had an output of 88,000 tons and the company had also absorbed the Bagdad production which accounted for an additional 19,000 tons. White Pine Copper, which began production in the mid-'50s, had a 1973 output of 78,000 tons.

In 1950 there were only two large integrated U. S. copper producers with mines, smelters and refineries. These two were Anaconda and Phelps Dodge. By 1973 Kennecott had become an integrated producer through the construction or purchase of smelters and refineries. Asarco had integrated backward through the development of copper mines. Inspiration had become an integrated producer by purchasing a smelter and building a refinery. Magma had become an integrated producer by building a second smelter and later building a refinery. The White Pine operation in Michigan was completely integrated from mining through refined production.

Three major miners of copper, which did not operate smelting or refining facilities, nevertheless played a significant competitive role in the market in 1973 because their output was processed for them on toll. These three companies were Cyprus, Duval and Cities Service. Finally AMAX (Formerly American Metal) had purchased a half interest in the Anamax mine, which produced 64,000 tons in 1973. AMAX continued to operate a refinery but had no smelter.

This rather lengthy enumeration makes clear that the seven companies, which dominated the world copper scene in 1950 with two-thirds of the Free World total mine supply, have had their position radically altered by political, technological and economic developments in the six countries in which they had operated.

In addition, however, world mine production of copper in 1973 included substantial output from countries that were not major sources in 1950. These countries include Peru, the Philippines, the Republic of South Africa, Australia, Papua-New Guinea and Indonesia.

From a corporate standpoint these new sources are not controlled by any of the seven companies which dominated the industry in 1950.

Peruvian mine production of copper in 1973 was 241,000 tons and will rise sharply in the future. More than half the Peruvian production in 1973 came from the Toquepala mine of Southern Peru Copper, in which Asarco is the largest shareholder but in which Cerro-Marmon, Phelps Dodge and Newmont also hold interests. The Peruvian Government through Centromin now operates the former Cerro properties which in 1950 accounted for the bulk of Peru's reported production of 33,000 tons.

The Philippines had a mine production of 244,000 tons of copper in 1973 derived from some 11 or 12 operations, the largest of which was Atlas Consolidated with an output of 91,000 tons. In 1950 the Philippine production was only 11,000 tons.

The Republic of South Africa produced 194,000 tons in 1973 compared with only 37,000 tons in 1950. The largest South African production is from the Palabora mine which yielded 106,000 tons in 1973. Palabora is controlled by Rio Tinto Zinc; Newmont Mining is a minority shareholder. O'okiep, controlled by Newmont, the second largest South African producer in 1973, was the principal source of the country's copper production in 1950. Palabora had not been developed in 1950.

Australia produced 232,000 tons of copper in 1973 compared with only 19,000 tons in 1950. M.I.M. Holdings, in which Asarco has a 49% interest, accounted for 144,000 tons in 1973. It had no production of copper in 1950.

Papua-New Guinea produced 201,500 tons of copper in 1973 and none in 1950. The entire production of this country comes from the Bougainville mine, controlled by Rio Tinto Zinc through its Australian affiliate, CRA.

Indonesia had no production of copper in 1950. In 1973 it had an output of 42,000 tons from the Ertzberg mine. This production has expanded further since then.

Still further geographical diversification of copper mine production is in prospect. The Iranian Government is bringing a very large mine, Sar Chesmeh, into operation this year. Mexican production, which was 89,000 tons in 1973 compared with 65,000 tons in 1950, will be substantially increased when the Caridad mine of Mexicana de Cobre is brought into production in the course of the next two or three years. A major copper deposit has been identified in Panama, where the Panamanian Government in conjunction with Texasgulf is now undertaking a feasibility study.

This detailed enumeration shows that whereas in 1950 world copper supplies were dominated by seven companies there are today well over 20 companies and/or governments which play a significant role in the world primary copper supply and the number is increasing.

In 1950 mine production of zinc outside the "centrally planned economies" was 1,993,000 tons of which 623,000 tons or 32% was mined in the United States. In 1973 mine production outside the "centrally planned economies" was 4,788,000 tons -- an increase of 140% -- but in the United States 1973 mine output was only 479,000 tons -- a decline of 23%.

The big increase in world mine production during this 23-year span was in Canada. In 1950 Canada had mined 313,000 tons of zinc, most of which had come from four mines -- the Sullivan mine of Consolidated Mining & Smelting (now Cominco); the Flin Flon mine of Hudson Bay Mining & Smelting; the Buchans mine operated by American Smelting and Refining (now ASARCO); and the Waite Amulet mine, controlled by Noranda. There were, in 1950, a large number of smaller operations which exported their concentrates to Europe or the United States.

In 1973 Canadian mine production of zinc had risen to 1,352,000 tons. The Sullivan, Flin Flon and Buchans mines were still producing although Buchans output had dropped considerably. The Waite Amulet mine had closed down. In its place there were a host of new producers. The Timmins mine of Texasgulf had been established as the largest single zinc mine operation in the world. Other major new producers were the Brunswick mine, controlled by Noranda; the GECO mine owned outright by Noranda; Mattagami Lake, a Noranda affiliate; Cyprus Anvil Mining, controlled by Cyprus Mines; Pine Point, a Cominco affiliate; and the Heath Steele mine, owned by AMAX and International Nickel. In 1950 two companies operated zinc refineries in Canada -- Cominco and Hudson Bay. By 1973 two new producers of slab had been added -- Valleyfield of the Noranda group and Texasgulf.

The other countries that were substantial miners of zinc in 1950 were Mexico with 207,000 tons; Australia with 186,000 tons; Peru with 97,000 tons; the Belgian Congo with 82,000 tons; Italy with 78,000 tons; and Western Germany with 76,000 tons. All these countries had larger outputs in 1973 -- production had more than quadrupled in Peru to 456,000 tons and had more than doubled in Australia to 488,000 tons. Peruvian production includes one large group of mines, formerly operated by Cerro de Pasco and now in the hands of Centromin, a government agency, and a large number of smaller operations, predominantly in private hands, though marketing is handled through a government organization, Minpeco.

Australian production has increased largely through expansion of existing mines -- notably at Mount Isa and Broken Hill. Whereas in 1950 only one company, Electrolytic Zinc, produced slab zinc, in 1973 there were two additional zinc refiners -- Broken Hill Associated Smelters and Sulphide Corporation.

A similar development occurred in Mexico. The Rosita plant of American Smelting was the only Mexican slab zinc producer in 1950; in 1973 this plant was operated by Asarco Mexicana (now Industrial Minera Mexico), controlled by private Mexican investors. In addition in 1973 there were two new Mexican producers of slab -- Penoles and Zinc Industrial.

Just as Canada led the world in expanding zinc mine production, so Japan led the world in expansion of zinc smelter production. In 1950 Japan had produced 57,000 tons of zinc from its mines and 54,000 tons from its smelters and refineries. In 1973 Japanese mine production had risen to 291,000 tons and its slab output to 929,000 tons, making it the non-Communist world's leader in terms of metal recovered.

Two companies -- Mitsui and Mitsubishi -- operated three small electrolytic zinc plants and two horizontal retort smelters in 1950. In 1973 there were eight electrolytic plants operated by six companies and four retort plants operated by four companies.

Expansion of zinc mine production includes a number of countries that were relatively small miners in 1950 but are now major sources -- Sweden, Spain, Zambia (formerly Northern Rhodesia) and Southwest Africa. In addition countries that were not listed as zinc miners in 1950 but that now produce substantial quantities include Ireland, Greenland, the Republic of South Africa, Finland and Korea. Iran and Thailand are two Asian countries that are expected to become major suppliers. Brazil is taking steps that it expects will lead to a greatly increased role in the zinc industry.

In the face of all this, zinc producers in the United States have lost ground. In 1950 Anaconda was a major miner and the largest slab producer of zinc; today its role in the industry is limited to 60% control of a small lead-zinc mining operation in Utah. In 1950 the famous Tri-State district of Oklahoma-Kansas-Missouri was the country's second largest source of ore and the largest miner there, Eagle-Picher, ranked third among the country's zinc producers. Eagle-Picher also operated a retort smelter. Now the smelter is shut down and so are the mines. U. S. Smelting operated a large mine in Utah -- now closed. In 1950 American Zinc had mines in the Tri-State district, Tennessee, Washington and Wisconsin and two operating smelters. One of these plants is closed and the other has been acquired by AMAX, while the mines in Tennessee are now owned by Asarco. Mattiessen & Hegeler, Athletic Mining & Smelting, and U. S. Steel all of which operated zinc smelters in 1950 are now out of the zinc business.

In place of fourteen plants producing slab in the United States in 1950, today there are only six with prospects that one or two new plants may be built. No horizontal retort smelters remain in operation. There are four electrolytic zinc plants, one electro-thermic, and one vertical retort smelter in the reduced roster of U. S. slab producers.

But although the list of domestic sellers of primary zinc has been drastically reduced, the competitive situation has certainly not lessened. In 1950 the United States imported 156,000 tons of slab and exported 13,000 tons. In 1973 it imported 589,000 tons of slab and exported 15,000 tons. To bring the story up to date, last year, 1976, imports rose to over 700,000 tons, exports were only 3,000 tons; and domestic slab output was but 534,000 tons. From 85% self-sufficiency in slab supply in 1950 the United States has dropped to 40% self-sufficiency in 1976.

Because lead and zinc are so frequently mined together, there is a tendency to think of these two metals as if they were Siamese twins, whose fate is indissolubly linked the one to the other. Yet over the span of the last quarter century, the experience of the two industries in the United States has been strikingly dissimilar.

In 1950 world mine production of lead outside the "centrally planned economies" was 1,634,000 tons of which 431,000 tons or 26% was mined in the United States. In 1974 mine production outside the "centrally planned economies" was 2,707,000 tons -- an increase of 66%. In the United States mine production was 664,000 tons -- an increase of 54%. Thus whereas U. S. mine production of zinc declined during this quarter century while mine production elsewhere was rising strongly, U. S. mine production of lead almost kept pace with the expansion of output elsewhere.

The divergence can be explained by the decline in zinc production in the Rocky Mountain and Tri-State areas, where the lead content of ores was relatively low, and by the successful development of major new lead-rich deposits in central Missouri, where the by-product zinc content is much lower than the lead content. Six sizable mines have been brought into production in the central Missouri belt -- three by St. Joe Minerals, long the largest lead miner in the country. The three others include two joint ventures, one between AMAX and Homestake and the other between Cominco and Dresser

Industries. A third mine belongs to Kennecott, acting on its own. Thus five strong companies which had not previously been involved substantially in domestic lead mines are now major producers in central Missouri.

U. S. production of primary refined lead is currently in the hands of five companies -- St. Joe, Bunker Hill, ASARCO and the AMAX-Homestake joint venture. In 1950 the first three companies also produced refined lead. Two other companies that were then refiners -- U. S. Smelting and Eagle-Picher -- are no longer in the business. Domestic refined output has risen from 508,000 tons in 1950 to 712,000 tons in 1974, a gain of 40%.

Imports of refined lead in 1950 were 442,000 tons; in 1974 these imports were only 118,000 tons. The sum of domestic primary output plus imports was thus less in 1974 (830,000 tons) than in 1950 (952,000 tons) even though meanwhile current consumption had risen. The explanation for this discrepancy lies both in increased recycling of secondary lead and in the operations of the strategic stockpile. In 1950 the stockpile was buying -- in 1974 it was selling.

Clearly the United States today is less dependent on imports than it was a quarter century ago thanks to greater domestic mine production and improved scrap recovery. Of course a part of domestic refinery output in both years was obtained from imported ores -- 90,000 tons in 1950 and 93,000 tons in 1974 -- but as can be seen such imports have remained fairly constant. Indeed, some U. S. mine production has been shipped as lead concentrate for smelting and refining abroad in recent years.

Changes in lead mine production outside the United States have been less dramatic than the experience in zinc. Canadian mine production increased more than four-fold in zinc but just about doubled in lead. The major new sources -- Timmins, Brunswick, Anvil, and Pine Point -- all represent deposits in which the zinc content is substantially greater than the lead content.

Similarly in Peru, Australia, Mexico and Japan lead mine production has increased but in lesser proportions than the gains in zinc. As in zinc, Ireland, Greenland, Spain, Southwest Africa, Morocco and Sweden have become significant sources of lead mine production in recent years with Spain, Southwest Africa, and Sweden marketing their productions as refined metal. Japan, which plays such a significant role in the zinc market, where it is today the leading marketer of slab, has a much more modest role in lead. Its 1974 output of 251,000 tons of refined metal contrasted with only 18,000 tons in 1950. Nevertheless the United States, Germany and Australia each produced more refined lead than Japan -- which thus ranked fourth outside the "centrally planned economies". Moreover Mexico, France, and Canada each have refined output almost equal in magnitude to the Japanese volume.

Of the five metals considered in this paper lead has perhaps shown the least dramatic changes in the competitive situation since 1950, but that is not to say the situation has remained static. There are several new producers; some of those that produced in 1950 are no longer in the market; the United States has become more self-sufficient. However, the huge secondary output and the dependence on some imports mean that U. S. primary producers remain sensitive to changes in the international picture, as recent price movements of the metal clearly demonstrate.

And now to turn to the last of the five metals, the one with the smallest tonnage and the highest price of the five -- namely, nickel. In 1950 nickel came closer to being a one-country one-company metal than any other of the base metals. World production outside the "centrally planned economies" was about 135,000 tons and of this 124,000 tons was produced in Canada. Almost 90% of the Canadian production was accounted for by a single producer, International Nickel. The United States had no mine production; a small amount of nickel sulphate was recovered from copper refining operations. New Caledonia, with 7,000 tons of mine output, was the only producer of consequence outside Canada.

By 1974 world mine production of nickel had increased to 647,000 tons -- more than four times the level in 1950. Thus the rise in demand for nickel had caused an expansion in mine production much greater than for copper, zinc or lead. Canadian 1973 nickel production was more than double the 1950 level but Canada's share of the world total had shrunk from 90% to 45% of the total.

International Nickel, now called INCO, continued to account for the greatest part of the Canadian output. Precise production data were not published by INCO but its deliveries of nickel in 1974 amounted to 250,000 tons or five-sixths of the Canadian output. Falconbridge reported delivering 45,000 tons and Sherritt Gordon, faced with imminent exhaustion of its Lynn Lake properties, produced only 3,000 tons.

Whereas in 1950 only New Caledonia had been a substantial producer of nickel, in 1974 there were seven countries other than Canada each of which had a production in excess of 10,000 tons. New Caledonia with 143,000 tons remained the second largest source of the nickel. Societe

le Nickel accounted for somewhat more than half of the New Caledonia production with an output of 74,000 tons. The balance came from mines which shipped ore to smelters in Japan.

Australia, which had no production in 1950, was the world's third largest source in 1974 with an output of 45,000 tons, most of which came from Western Mining's Kambalda mine. At the end of the year Greenvale, a property in Queensland controlled by Freeport Minerals, began production. It has a capacity of 23,000 tons annually from lateritic ores. A third large Australian enterprise is now under development -- the Agnew mine, controlled by Selection Trust and M.I.M. Holdings.

The Dominican Republic occupied fourth place in 1974 with a production of 33,000 tons from the Falconbridge Dominicana property, two-thirds owned by Falconbridge of Canada.

In the Republic of South Africa the two platinum producers, Rustenburg and Impala, recover substantial amounts of nickel as a by-product from their platinum operations. In the United States, Hanna Mining has been operating a property in Oregon for almost 20 years from which it produced 13,000 tons in 1974. Indonesia, Greece and Southern Rhodesia are all producing nickel in substantial amounts. Most of their output is shipped as ores or concentrate to Japan or Germany for processing.

Two sizable nickel investments which began production in 1974 were the Marinduque property in the Philippines and Botswana RST Ltd. in Africa. Marinduque has a capacity of 38,000 tons and Botswana one of 20,000 tons. Metallurgical problems have thus far prevented these two mines from reaching full capacity. Guatemala is expected to become a sizable producer from a deposit now under development by INCO.

This recital makes clear that both from the corporate and geographic point of view nickel production today is far less concentrated than the situation that existed a quarter of a century ago.

It bears repeating that capital costs of new projects for each of these five metals have increased by a staggering amount due to worldwide inflation. Operating costs have also risen apace, primarily because of higher energy costs and wage rates. Prices of all five metals today are well above those that existed in 1950. This trend results from the underlying economic forces. Competitive influences in each of these five metals are greater today than they were 25 years ago.

In the long run metal prices are determined by supply and demand. As demand rises further, prices will also rise. The cost of bringing in new project is inhibiting new investments at prices prevailing currently. Thus the possibility looms that there will be a lag in expanding capacity with the consequence that periodic shortages can be expected in times of high economic activity. To repeat, shortages will be due to bottlenecks in capacity -- not to shortage of known reserves. For each of these five metals there are known deposits, as yet unexploited, with reserves adequate to meet probable expansion in demand over the balance of the century.

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Influences that determine metal prices

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Influences that determine metal prices

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Synopsis
The influence of the three factors supply, demand and cost on metal prices is considered. Brief discussion of the problems that have arisen because of the recent (since 1971) fall in the value of the U.S. dollar as compared, for example, with German, Japanese and Swiss currency precedes a review of the special conditions that obtain in the minerals industry. Outstanding among these is the long lead time that is required to bring a new venture to the production stage.

The differing behaviour of mineral commodities in the context of supply, demand and cost is outlined, particular attention being paid to trading on the commodity exchanges, as well as to political, environmental and energy considerations.

Prices of all commodities, including metals, are influenced by three major factors – supply, demand and costs. Some commodities are like chameleons, their prices responding with almost dazzling speed to even the slightest change. Others are sluggish in their price reactions – like a reptile awakening from a long period of hibernation.

This paper proposes to examine some of the reasons for the disparate price behaviour that is so evident in the metals industry. The constraints of time and space necessarily make these remarks anything but a complete study.

It is, of course, overly simplistic to speak of supply, demand and costs as if these were straightforward categories. They are not. Each of these major factors is itself responsive to a host of influences. And perhaps the most baffling aspect of a discussion of prices is that there is no constant yardstick by which to measure price changes.

Engineers are accustomed to precise measurements. Production can be defined readily in terms of weight of product – tons, pounds, kilogrammes, ounces or grammes – it can be reported in units that are constant – so many automobiles or houses or kegs of nails or feet of wire. Measurements of time and distance are also precise – output per day or per man-shift; haulage over so many miles or kilometres.

But in discussing prices one must use units of currency – dollars, pounds, Deutsche marks, Swiss francs, Japanese yen – and these currencies are anything but constant. In recent years, with the advent of floating exchange rates, they have been constantly shifting in relation to one another – like the various planets within the solar system and the solar system itself within the universe. Unfortunately, these shifting relationships involve a far less predictable course for the economist or central banker than the planets and the stars involve for the astronomer.

To put it another way, over the last seven years, since the devaluation of the dollar in 1971, the price of copper in marks or yen looks quite different from the price of copper in pounds or United States dollars. Copper producers consider the price of about 55–70¢/lb that has prevailed in the copper market since mid-1974 as a low price. And yet, in terms of dollars, it is higher than any price that prevailed prior to 1960 and well above the average price of the 1960s. The point is, of course, that the dollar has lost value.

Because the Western Hemisphere produces well over 60% of the copper supply outside the Communist bloc, it has been usual to describe copper prices primarily in terms of U.S. dollars.

Professional economists, in describing price trends, prefer to adjust historical prices by a deflator that is supposed to eliminate the effects of inflation or currency devaluation. This is confusing to the man in the street and perhaps to the engineer. They prefer to describe prices in terms of actual quotations as expressed in a given currency.

For example, the dollar equivalent of the London Metal Exchange prompt price for copper wirebars on 30 December, 1977, of £666 per metric ton was 57½¢/lb. The quotation for prompt wirebars on 31 December, 1974, had been £536 per metric ton, then equivalent to 57¢/lb. Hence, the man in the street and, in fact, the dealer in copper would say that the 1977 price in U.S. money was roughly equal to the 1974 price, even though the price had risen in terms of U.K. currency. But the professional economist would say that the price was lower at least by the equivalent of the approximate 18% that represents cumulative inflation in the United States during the three intervening years.

The German or Japanese copper consumer would have still another view. He would convert the dollar equivalent back into marks or yen. It took 13% fewer marks and 20% fewer yen to buy a given quantity of dollars at the end of 1977 than it had taken to buy that amount of dollars at the end of 1974. The German or the Japanese view of the copper price trend at the end of 1977 would therefore differ both from those of the U.S. man in the street and the economist. In their opinion copper prices at the end of 1977 were well below the prices at the end of 1974.

It is all somewhat confusing, this absence of a constant yardstick. For about 26 years – from the Bretton Woods monetary conference at the end of the second world war until the official steps taken

in 1971 to untie the dollar both from gold and from other currencies – despite some inflation, the trading world had felt quite happy to measure prices in dollar terms because, for most of the major trading currencies, the exchange rate for the dollar had been relatively constant. Since 1971, however, it has been fluctuating. With a heavy trade deficit, the prospect for restoring stability to the value of the dollar in the early future does not look promising.

Let us now return to the supply–demand–cost influences that affect price and try to analyse why it is that different commodities behave in such very different ways.

On the supply side the outstanding characteristic of the mineral industries is the long lead time that is required to bring new ventures into operation. Even when supply is expanded through increasing the capacity of existing ventures, the capital-intensive nature of the industry and the complex equipment required (much of which must be specially ordered from the manufacturer rather than purchased off-the-shelf) indicate a minimum period of about two years for any significant increase in throughput. When green field projects are involved, the length of time may vary from three or four years for new properties in existing mining districts (where the infrastructure of housing, transport and power supply is already available) to as much as 8–10 years for projects that are located in areas that lack infrastructure. This is a very different proposition from the production of most agricultural commodities. If demand rises, annual crops can be readily expanded by devoting more acreage during the planting season, weather permitting.

In the case of a few minerals the supply side may also be augmented by drawing on the accumulations of previous years. This is particularly true of the traditional monetary metals – gold and silver. Very large quantities of these precious metals exist, but they are held by individuals who are only tempted to part with them at what appears to be attractive prices. The rate of availability to the market of such retained-value materials is therefore unpredictable.

For the industrial materials high prices may tempt out somewhat larger than normal quantities of salvageable metal. It is often said, for example, that under the streets of such large cities as London, New York and Tokyo there exist copper mines of vast magnitude primarily in the form of wire and cable. It should be quite obvious that economic activity would be adversely affected if the decision were made to mine these deposits while the wire and cable still perform a useful function. In extreme shortages some entrepeneurs have actually done some mining of copper wire or tube while still in use, but the practice tends to be frowned on by the police!

Except during periods of recovery from a recession, when substantial unused capacity is available, expansion of supply of metals is necessarily a sluggish business.

On the demand side much greater variations exist in the characteristics of various metal industries. Generally speaking, metals are industrial raw materials and demand is heavily influenced by the business cycle. Some metals – lead and tin, for instance – enter primarily into consumer goods, such as storage batteries or food containers. The year-to-year variation in consumption of lead and tin tends to be relatively limited. Since the end of the second world war the growth in their consumption has been gradual, and responds chiefly to the curve of population growth.

Other metals are primarily used in the capital goods industries. Consumption of these metals shows sharp shifts from year to year, depending on the rate of construction and capital investment. In the post-war era the aluminium industry has averaged a growth of about 8% annually, but between 1972 and 1973 it rose by almost 20%, whereas between 1974 and 1975 it dropped by more than 20%. Thus, the aluminium producer in planning capacity expansion has learned the difficulties of timing new plant capacities so as to synchronize with the tides in demand for his product. This is equally true for steel, copper, nickel and zinc.

More importantly, it must be understood that demand cannot be equated with consumption. In times when shortage is feared, demand will exceed consumption as users build up stocks to assure themselves of adequate supplies. In times when surpluses develop, demand will lag behind consumption as consumers draw on their inventories in anticipation of lower prices, revelling in a comfortable feeling that suppliers will be able to deliver metal on very short notice.

Certain metals are traded on commodity exchanges – copper, lead, zinc, tin, silver, gold and platinum. For these metals there is always the possibility that swings in demand will be magnified through the activities of investors and speculators. Although the members of the commodity exchanges like to assure public authorities that there is a minimum of speculative influence on commodity prices through the commodity exchange, my own observations are distinctly to the contrary.

Recently, a young man who cuts my wife's hair asked me if I did not think he could make some money through the purchase of copper. He had been called on the telephone by a broker, previously unknown to him, who had apparently picked his name at random from the telephone book. I explained to the hairdresser the complexities of the copper situation – all of which were new to him – and the grave risks that are involved in trading in commodities. He decided against the undertaking, but how many others have been induced to deal in commodities on the word-of-mouth assurance of someone, not necessarily an expert, who is interested in making commissions through commodity trading by others.

The cumulative effect of these purchases – and

of subsequent sales – is enormous. One has merely to recall the dizzy climb in sugar prices in 1974 and the equally spectacular gains in coffee prices in early 1977 to recognize the strain that is placed on commodity prices when large numbers of people, not directly involved in the business, decide to take flyers in a commodity situation in which they perceive a chance for a quick profit.

The movements of copper and aluminium prices over the entire post-war period make this point clear: the swings in consumption of these two metals are basically similar, although, of course, aluminium has had a much greater long-term expansion in its market. This is a matter of secular growth, which has little effect on the day-to-day or month-to-month price pattern for aluminium.

It is true that the published price of aluminium is not always the actual price at which aluminium is traded. The deviation from the published price is sometimes fairly significant. Yet, even allowing for this difference between transaction prices and published prices, at no time has aluminium exhibited the kind of pattern that has characterized copper in years of great economic change. Between 1 January, 1973, and 31 December, 1974, a period of just two years, the price of copper on the London Metal Exchange rose from £454 (then equivalent to 48.45¢/lb) to a peak of £1350 (equivalent to almost $1.50/lb) at the beginning of April, 1974, only to fall back to end 1974 at £536 (equivalent to 57¢/lb). During the same two years the published price of aluminium in London rose from the equivalent of 24.5¢/lb to a peak of 39¢/lb without any erratic day-to-day fluctuations. The increase in aluminium prices was, of course, directly related to the sharp increase in energy costs, which, in turn, reflected the quadrupling of oil prices.

One needs to stress the difference between demand and consumption – and yet this is frequently forgotten by government planners and academic economists who indulge themselves in the perilous sport of charting future price trends for metals. Consumption is difficult to forecast for those metals sensitive to the business cycle, because it is so heavily influenced by capital spending. But demand is almost impossible to forecast – particularly for commodities traded on exchanges.

Trading in commodities on exchanges is influenced by other factors than either professional hedging by actual consumers and producers or the speculative plunges by traders, many quite unsophisticated, who are anxious to pick up quick profits. Commodities are sometimes used by those who would hedge themselves not against their commodity needs but against perceived currency risks. When sale of one currency to buy another is frowned on by the monetary authorities – or even actually banned – taking a position in a commodity such as copper, gold or silver may be a subtler but equally effective way of getting out of a currency until the crisis has been passed. And when the currency danger is considered over, this kind of hedger liquidates his position, thereby affecting the price for both the producer and consumer.

Still another role that the commodity exchanges play which has little or nothing to do with the demand, supply or costs of the commodity is as a haven for surplus cash. So long as futures command a contango (that is, a premium for futures over spot) equal to the going bank interest rates, a purchase of spot hedged by a sale of the forward position will be attractive to the banker or the insurance company with surplus funds. When the trading is done on the London Metal Exchange this means a transaction every 90 days, or slightly more than four times a year.

A bank that is long of spot copper and short of forward is quite happy to stay long of the spot provided that it can continue to sell the forward position at a sufficient premium four times a year. True, the bank is financing the inventories for the producer and consumer, but by doing its refinancing four times a year it is putting great pressure on the price to maintain its position.

Some of my colleagues in the business say that this function justifies the existence of the commodity exchanges. But, in my eyes, the ease with which a producer can sell his output even in times of obvious surplus (such as the entire period from mid-1974 to early 1978) has encouraged the maintenance of production – i.e. supply – at excessive levels when the production is not really needed. Had this financing not been available, the Chilean and Zambian Governments, which have boasted that they had their entire output sold at all times, might instead have recognized they were placing pressure on the market by continuing to run at capacity. Precisely because the aluminium industry did not have this financing facility available to it, aluminium producers reduced production in 1975 and 1976 when inventories mounted, and they had a far happier time in 1977 than did the copper industry.

Economists generally agree that consumption of metals, as distinct from demand, is not particularly price-sensitive. A high price will not immediately cause a switch from one metal to another because the user is not sure how long the condition will last and his cost of changing over is considerable. Equipment has to be modified and products need to be redesigned. Sometimes a long period of testing is involved. Questions of performance and safety arise. But a long-term price trend undoubtedly does eventually affect consumption and, hence, demand. The substitution of aluminium for copper in certain uses, of plastics for zinc and of titanium dioxide for white lead offers classic examples in which price has played a role, but is by no means the only cause, in a switch.

On the supply side the major factors are very familiar. The long lead time in bringing in new plant makes for little flexibility in supply over the short term, once available capacity has been reached. The rate of discovery of new mineral

resources is an unpredictable business, despite the enormous advances in geological knowledge and prospecting techniques. In the last quarter century the rate of discovery of all major metals has more than kept pace with the increase in demand.

The troublesome factors in expanding supply may be categorized as (1) political problems in access to promising geological provinces; (2) rising investment needs as the industry becomes increasingly capital-intensive; (3) effects of world-wide inflation on capital requirements; and (4) uncertainties about future provision of energy.

Obviously, these factors all impinge on the third leg of the triangle – costs. The political problem has become exceedingly acute since the early 1960s. It has been characterized by growing nationalism in the less developed countries. This tends to frighten investors in the capital-exporting countries who might otherwise be tempted. And in the developed countries there has been a pot-pourri of restrictive environmental measures; of cordoning off huge chunks of territory for recreational purposes, where mining is not permitted no matter how great the mineral wealth; and of savage increases in taxation to accomplish laudable social goals. Whether society can afford to undercut its output of basic materials and still meet these social goals is a question that politicians should ask.

The increasingly capital-intensive nature of the metals business is a reflection of the lower grades of ore being exploited. It also results from more complex metallurgy and the necessity to meet demanding environmental standards. Despite a sincere desire to reduce the use of energy in producing metals, in many instances the energy load has been increased as more pumps, fans and ventilators are used to meet stringent emission regulations.

And inflation is reflected in the soaring prices attached to the equipment purchased. To produce a ton of refined copper per annum now requires an investment generally estimated at $7000 a short ton, compared with $1500 a short ton 20 years ago. For a ton of nickel the required investment now seems to be in the order of $15 000 – $20 000 a ton. This has put a severe strain on the finances of enterprises that were considered gilt-edged a few years ago.

As to the availability of energy, this is of great importance to all metal enterprises, but to none more than the aluminum business. It has been suggested that further growth in U.S. aluminum production will be inhibited by the fact that the energy required to employ one man in new aluminum facilities could provide the energy needs of a less energy-intensive business employing five or six men.

In regard to costs and prices, it is the dream of every businessman to sell his product at a price that fully covers his total costs (including the cost of money) plus a profit. In some industries prices are indeed established on the basis of current costs. These industries do not include those whose products are traded on commodity exchanges – as the wheat farmers who have been picketing President Carter in the White House have learned quite clearly in recent months. Among the metals, the three major industries that most nearly fill this formula for establishing prices based on cost plus profit are those of steel, nickel and aluminum. That is how they initiate price formulation. Time and again prices of these metals have been raised in the face of faltering or somnolent demand because costs are up.

But even for these industries, not subject to the rigours of public trading in their commodities, the sharp influence of the law of supply and demand moderates the use of costs as the major price determinant. Sellers anxious to move a few extra tons find ways by which the published price can be modified in the buyer's favour when there is a surplus of supply over demand. Sometimes such imbalance brings about the kind of disorganized price structure that prevailed in nickel in 1977 – when price advances posted early in the year had to be rescinded. Later, sizable discounts developed even from these lower prices. Of course, the reverse happens when demand soars, far exceeding supply. Then one hears about grey or black markets in steel, nickel and aluminum at prices well above the published quotations.

The commodity exchange traded metals are keenly sensitive to the supply–demand equation over the short term. Yet, in the long run their prices must conform to trends in costs. The experience may be a long and painful one, as has been the case with copper and zinc since mid-1974; eventually, however, the inexorable realities will force the closing of a part of the supply that has been produced at costs greater than price. The melancholy roster of closing mines in late 1977 and early 1978 bears witness to this truth. In time, and after much hardship, a new balance is struck.

This paper has not dealt with the current debates about commodity agreements as a means of ameliorating price swings – that is a subject which merits a full discussion on its own. But, in closing, one must observe that international agreements as to what constitute proper price levels are hard to come by and even harder to enforce. I point to the International Tin Agreement as a demonstration of that unpalatable truth.

Everyone would like stable and remunerative prices based on clearcut choices. Yet in this brief look at the factors that influence prices, one can see clearly how complex and sensitive the pricing mechanism is and how multitudinous are the causes of price behaviour.

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Keynote Address: A view of commodity agreements

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The Aus.I.M.M.—A.I.M.E. Joint Conference Australia 1978
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Simon D. Strauss was born in Lima, Peru, and was educated in Chile and New York City.

His professional career began as a member of the editorial staff of the *Engineering and Mining Journal* in New York. Subsequent assignments included editorship of a suburban weekly newspaper, a time as investment securities analyst for Standard Statistics Company (predecessor of Standard & Poor's) and almost 5 years in government service in Washington during World War II assisting in procurement of strategic materials for the war effort.

Mr. Strauss joined the American Smelting and Refining Company (now ASARCO Incorporated) in 1946 in its sales organization. He has served successively as Sales Manager, Vice President in charge of sales, Executive Vice President, and is currently Vice Chairman of the company. He has been on the board of the company since 1953.

Mr. Strauss also served on the boards of two associated companies—Industria Minera Mexico, S.A. and Southern Peru Copper Corporation.

He has been active in trade association work and has been President of the Lead Industries Association, the Silver Institute, and the Zinc Institute. He has served on the boards of the International Lead Zinc Research Organisation and the International Copper Research Association. He retired in 1977 as Chairman of the American Bureau of Metal Statistics. In 1963 he was awarded Copper Man of the Year by The Copper Club and subsequently served as its President.

Mr. Strauss has lectured on minerals economics at the Massachusetts Institute of Technology and Pennsylvania State University.

A View of Commodity Agreements

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For the last 4 years political leaders have found a new subject on which they can safely generalize wihout creating opposition. That subject is commodity prices. Since the four-fold increase in OPEC crude oil prices, public attention has focussed as never before on the subject of commodity prices. To advocate stabilizing commodity prices is akin to supporting motherhood or peace or better schooling. Everyone gives lip service to the concept that stable commodity prices are desirable.

It is easier to state the principle than to achieve it. Prices that are stable in terms of one currency may be clearly unstable in terms of a different currency. This has become a troublesome matter since 1971, when the world's leading trading currencies were set free to float in relation to each other.

To illustrate: consider copper prices in the interval between the end of 1974 and the end of 1977. During those 3 years, the copper price in pounds sterling on the London Metal Exchange rose by 25 per cent. During that period, however, in terms of the USA dollar equivalent, the price was unchanged. And during that period, in terms of the German mark equivalent the price shrank by 13 per cent while the Japanese yen equivalent fell by 20 per cent.

Thus a price that appears stable in dollars, rose in terms of pounds sterling and fell in terms of marks and yen. Had this result been achieved as a consequence of an international effort to stabilize prices, an American would have said the effort was successful. An Englishman would have said it had failed to prevent a price rise. And a German or a Japanese consumer would have been happy to have covered his copper needs at a lower cost in terms of his own currency.

From the standpoint of copper-exporting countries, stability of price for these 3 years would not have been an acceptable outcome. The price at the end of 1974 had been considered inadequate. And with unabated world-wide inflation having prevailed between 1974 and 1977, the same price at the end of 1977 was definitely still more unsatisfactory. The financial reports of most copper producers and the statements made by political leaders in the copper-exporting countries make this matter very clear indeed.

Thus regardless of the numerous statements made about the need for commodity price stability, obviously there are vexing problems in arriving at the answer to two questions.

1. Stability in terms of what currency or what other standard?
2. Stability at what level of price in relation to the differing concepts of producers and consumers?

These two troublesome problems largely account for the inordinate amount of time and effort consumed in discussions of possible commodity agreements between producers and consumers.

Arrangements such as those made by OPEC are of an entirely different character. And, to revert to the problem of how a stable price is to be measured, note current dissatisfaction on the part of oil producers with a price expressed in USA dollars at a time when the dollar is under pressure in current markets. OPEC decisions are made by producers alone. It would be inappropriate to argue that consumers' interests are not considered. The OPEC people are too sophisticated to enter into arrangements which ignore the effect of price structure on their customers. But the point is that their decisions are made in the light of a producer interpretation of market effects. Primary weight is given to maximizing revenue and profits for the oil producers. The prevailing rule is what the traffic will bear; and differences of opinion among the producers largely arise from differences in the stress placed

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on near-term benefits versus possible long term adverse consequences.

In the 4 years since the oil price rise, most informed commentators have come to the conclusion that the oil exporters have strengths greater than those of exporters of other commodities. Oil production is readily controlled without widespread adverse impact on employment. Oil consumption, while somewhat responsive to economic cycles, is less sensitive to sudden drops in demand than most industrial commodities. Oil is not readily recycled, so the salvage factor which is of prime importance to metal exporters counts for little in oil. Oil exporting countries have, on the whole, a stronger financial position (in some cases an apparently impregnable financial position) than countries dependent on exports of other commodities for their foreign-exchange earnings.

In late 1974 and early 1975, many predicted that the OPEC example would be widely followed in other commodities. Events have not supported that belief. Perhaps the closest approximation of an OPEC programme has occurred in bauxite. Prices of bauxite have risen sharply, due in large measure to radical increases in taxes by bauxite-exporting countries. But those increases have been from a very low base. They have thus far not been a major component in increasing the cost of aluminium, which has strengthened primarily because of the impact of higher energy costs, the general inflationary trend, and the relatively good balance between supply and demand for this metal.

Despite frequent meetings, the principal copper-exporting countries have thus far not been able to effect a co-operative marketing arrangement to ameliorate the wide swings in copper prices that have been a thorn in the side for producers and consumers. In fact, CIPEC, as the copper exporters' organization is known, has been a leading advocate of a producer-consumer co-operative effort.

Efforts to maintain a so-called European-producer zinc price have run into problems, primarily as a result of a severe excess of supplies over demand. Discussions among mercury producers resulted in a tentative floor price arrangement, which, however, has not prospered. A uranium cartel has been the subject of investigation by the USA Department of Justice and the organization appears no longer to be active. A similar investigation into the potash market has aroused a controversy between the Canadian and USA governments. Meanwhile, in practical terms, the potash market has been weak. The leading phosphate exporter, Morocco, did arrange an abrupt increase in phosphate prices 3 years ago but competitive forces appear to have eroded much of the price gains since then.

The record indicates that for most minerals a unilateral undertaking by a small group of producers cannot successfully maintain stable and remunerative prices for an extended period. True, under favorable market conditions, prices of certain commodities show minimal fluctuations—particularly when the number of significant producers is relatively limited—but this situation is rarely enduring.

The nickel market for many years was an example of apparent stability. A single producer had so large a market share that its price decisions were in fact controlling. However, now that the number of nickel sellers has increased and the demand for nickel has faltered, this market appears today to be in a state of disarray.

To those for whom producer-dictated price arangements are unpalatable, a preferred alternative is an international agreement involving governments of the leading producing and consuming countries. The developing countries have been pressing hard for such agreements or understandings. Under the banner of UNCTAD, proposals have been made that a Common Fund be established which would support buffer stocks for some 18 leading commodities each of which would be the subject of a separate commodity agreement. Copper, tin, iron ore, bauxite, and manganese are in the designated group of commodities to be considered.

For the last 2 years there have been protracted discussions of these proposals. A chicken-and-egg situation appears to be emerging. The less developed countries favour establishment of the Common Fund with arrangements to raise up to $6 billion for buffer stocks even before the commodity agreements have evolved.

On the other hand, the industrialized countries are fearful of a Common Fund which might develop into a new form of international bureaucracy. They urge rather that the individual commodity discussions should be completed first.

Price instability arises from inbalances between supply and demand. In boom times supply appears inadequate. In periods of recession demand falters. Equating supply and demand is

not easy. Forecasts of demand can be accurate over the long term, but extremely unreliable over the short term. In the case of the minerals, a long period of gestation is required to expand productive capacity. Unstable prices can make the financing of expansion schemes difficult, as has been clearly evidenced by the virtual halt in new nonferous metal projects since about 1975. Various projects, financed prior to 1975, are approaching completion but once these have been brought into production, a protracted hiatus will occur before further significant expansion of capacity is available.

Given this history of erratic cyclical experience, it is small wonder that there should be such keen interest in what one might call the Joseph-Pharaoh syndrome. Joseph, an early forecaster based on his own vivid dreams, convinced Pharaoh to finance stockpiles during a period of 7 fat years so that Egypt could survive a subsequent 7 lean years. The Bible is silent on the question of price. It appears that Pharaoh was able to finance the stockpiling effort—presumably thanks to his unchallenged capacity to levy taxes. The experiment proved successful.

On an international basis, the one sustained effort by mineral producers and consumers to balance the fat years with the lean years has been in tin. Discussions about tin began shortly after the end of World War II and an international agreement was reached in 1956, to last 5 years. There have been four subsequent 5-year agreements, the most recent, the fifth, having been ratified in 1976 to last until 1981. The tin effort merits study, therefore, as a continuing pioneer effort to stabilize the price of a commodity through joint action by producers and consumers.

The agreement currently involves seven tin-producing governments and 22 tin-consuming governments. The International Tin Council (ITC) is operated on a basis of equal voting strength—1,000 votes for producers and 1,000 votes for consumers. The votes are distributed among the members in proportion to their production or consumption.

The Council sets floor and ceiling prices for tin, currently stated in terms of Malaysian currency, even though the price in world markets is customarily expressed either in pounds sterling per metric ton or USA currency per pound. To try to keep prices in the range between floor and ceiling, the tin agreement has two weapons. In periods of excess supply, producing members are expected to limit exports to percentages of agreed export quotas. In addition, a buffer stock is expected to defend the floor price by buying when the market is weak and to defend the ceiling price by selling when the market is strong.

The buffer stock is financed through required contributions from producer members plus voluntary contributions by consumer members. Producer contributions are equivalent to 20,000 tons of tin at the floor price. The voluntary contributions from consumers are equated to an additional 20,000 tons. Until the fifth agreement the consumer contributions had been small.

In theory tin seems ideal for a stabilizing arrangement. The seven producing members account for about 90 per cent of non-Communist world production of tin. Apart from Australia, they consume very little. The 22 consuming members now include all the major users of tin and have little indigenous output of primary tin. Thus almost the entire output moves across an international boundary on its way to market. The United States only became a member with the fifth agreement, but was an observer at Tin Council meetings under the previous four agreements. During this period it did consult with the ITC in regard to USA stockpile disposal programmes.

Despite their long existence, the tin agreements have not been notably successful in stabilizing prices. On one occasion the price fell below the then current floor—due to heavy exports by Russia, which was not then a member of the agreement but which has since joined. On many occasions, the price has risen above the ceiling—in fact it has been above the ceiling uninterruptedly for more than a year since early 1977. Floor and ceiling prices have been subject to constant review and have been frequently changed. In 1974, for example, they were changed so drastically that the new floor was set substantially above the previously prevailing ceiling.

Since the floor price has been successfully defended on all but one occasion, one would think that at least producer members would be happy with the agreements. Not so. They complain that floor prices have been inadequate to stimulate production. It is a fact that tin production has shown the lowest growth rate of any major metal. Consumers are unhappy because ceiling prices, set to insure access to adequate supplies at reasonable prices, have been so often and so persistently exceeded.

One explanation offered for failure to achieve

greater success has been that the buffer stock has been too small and that export quotas have been involved too soon when surpluses developed. It is argued that if more money had been available to buy surpluses, control of supplies through quotas would have been unnecessary. Further, larger stock, it is claimed, would have helped prevent sudden price increases.

Yet in a sense, the tin agreement had more than the buffer stock available to it. Large amounts of USA stockpile tin have been sold since 1963 and these sales had the same market effect as if they had been made by the buffer stock manager. The USA stockpile contained 350,000 tons of tin in 1963—more than 17 times the amount of stock financed by producer contributions. This huge reserve—equal to 2 years' production in the Free World—had been accumulated by purchases during the 1940s and 1950s. Without the stimulus of that buying, tin prices would doubtless have been weaker and tin production less prior to 1963.

Liquidation of the tin stockpile began in the mid-1960s. By the end of 1977 almost 150,000 tons had been sold. Of this amount, the largest sale in any 12-month period was between 1st July 1973, and 30th June 1974, when 40,000 tons were sold. During that same period the buffer stock was completely liquidated. And during that same period the price of tin—like the price of some other commodities—more than doubled to an all-time high.

This experience must give pause to any one who argues that if only the buffer stock had been larger than 20,000 tons of tin, the agreement would have stabilized the price.

In my view, a major handicap in operating a single international buffer stock to regulate prices —particularly prices of commodities traded on a commodity exchange—is the fact that by its very nature, an international agreement must be a matter of public record. When 29 nations sit around a table discussing tin floor and ceiling prices, the size of the buffer stock to be accumulated, the way in which purchases for or sales from the buffer are to be made, all this becomes known to the general public. Wisdom about tin—or copper—or sugar—or coffee—or any other commodity is not confined to the participants in these discussions. There are other keen students who are aware of the trend of events—of the forces that may impel demand upward or may restrict supply. These individuals know more or less exactly what the international agreement managers can do or will do in any given set of circumstances. They can judge when the buffer stock will probably be exhausted through sales required to protect the ceiling price. That is what happened in tin in 1973 and again in 1976. And they know quite well that once the ceiling price has been penetrated, enormous profits may be made by the shrewd speculator.

In answer to this argument, one is told that, but for the buffer stock, prices might have gone higher still. Perhaps so. But for the record it is a fact that the price of tin rose more sharply than the prices of some comparable commodities in the 1973-74 commodities boom, while the supply of tin has increased less.

Several explanations are put forward to indicate why despite the existence of a floor price that has been violated only once and a strong upward trend in the long-term market price, tin supply has not expanded. High taxes on the part of several major producing countries have skimmed off much of the benefit of higher prices. Costs have risen and grade of ore exploited has dropped, but these factors apply equally to the other major non-ferrous metals. A more subtle explanation is that investment in new tin mining projects is deterred by the existence of export quotas. Investors are said to be fearful of putting money into ventures in which control over their rate of sales is lodged in an international body.

In fact some observers suggest the tin agreement would have worked better without any restraints on production or exports—that a buffer stock should be constituted large enough to absorb whatever excess develops in periods of low demand. This would mean all producers could run at full capacity and consumers would be assured of an abundance of supplies at all times.

This is an interesting concept. Apply it to the copper situation since mid-1974. Assume for the sake of argument that in fact there had been a copper buffer stock in place. Assume further that it was designed to protect a floor price of 75c/lb, USA currency, for copper—a price well below the 1974 high but bearing a reasonable relationship to the then prevalent cost of producing much of the equipped world copper capacity.

Since mid-1974, visible stocks of copper have increased by between 1,250,000 and 1,500,000 short tons. This has occurred even though world prices since mid-1974 have for the most part been

at 60c/lb, USA currency, or below. These low prices have caused some producers to suspend operations, others to curtail operations, and still others to defer plans for expansion. Had a buffer stock been in operation, soaking up excess output at the price of 75c/lb, most producers would surely have continued to run at normal operating rates. The excess of supply over demand in this period of nearly 4 years, instead of being 1,250,000 to 1,500,000 short tons, would probably have been well in excess of 2,000,000 tons. And at 75c/lb, it would have cost $3 billion to finance the buffer stock thus far with the end not yet in sight.

Moreover, bear in mind that a floor price of 75c/lb would by now have been subjected to severe criticism by high-cost producers as clearly inadequate. Pressure would certainly have developed for still higher floor prices, particularly since the current wisdom is that to launch a new copper venture at today's inflated capital and operating costs, a price of better than $1/lb is required.

There is a serious dilemma here. If the tin experience suggests that export or production controls may have adverse implications, and if the copper experience points to a very high cost for an international buffer stock, what should be done?

Erratic prices constitute a grave problem. Yet, nowhere is it written that for every problem there is a perfect solution. Perhaps those who would solve the riddle of international commodity prices should satisfy themselves with something less than a comprehensive all-embracing scheme. In my own view—and the suggestion is put forward with diffidence—a system of loosely co-ordinated national buffer stocks is more likely to mitigate violent swings in commodity prices than is a single monolithic international buffer stock. Japan and France have made modest starts in this direction. The principal consuming countries, acting in their own enlightened self-interest, should consider programmes similar to that which Joseph outlined for Pharaoh. Without binding themselves to hard-and-fast price floors and ceilings (which will always provoke arguments between sellers and buyers), these countries could undertake that they would buy commodities when the international statistics clearly indicate there is a surplus. And they could undertake that they will sell from their buffer stocks only when there is a clear signal that demand is outstripping supply.

Perhaps the consultative producer-consumer forums that are now being discussed could be entrusted with the determination as to when there is a surplus and when there is a shortage. For example, the figures of the International Lead-Zinc Study Group—not their forecasts of the future but their statistics of the past—would in the last few years have on occasion signalled the desirability of zinc purchases by national stockpiles. And at times during the same period statistics would have signalled the wisdom of some sales of lead from any national buffer stocks previously accumulated.

This is just a suggestion. But it is worth considering. Multiple national stocks would come closer to emulating the workings of the market place than does a unilateral buffer stock such as that established under the International Tin Agreement.

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Statement of

Simon D. Strauss

Chairman
American Mining Congress
Minerals Availability Committee

and

Director, ASARCO Incorporated

before the

Trade Policy Staff Committee

United States Trade Representative

April 11, 1980

I am appearing on behalf of the American Mining Congress, an association of the principal domestic producers of non-fuel minerals and coal. My name is Simon D. Strauss and I am Chairman of the Minerals Availability Committee of the American Mining Congress. I am a Director and former Vice Chairman of ASARCO Incorporated, a major producer of non-ferrous metals. Its subsidiary, Federated Metals Corporation, is one of the country's leading consumers of tin.

This hearing has been called to give an opportunity to interested parties to present their views with respect to the current negotiations looking to a new International Tin Agreement, which would be the sixth of a series of five-year agreements dating back to 1956. You are also soliciting views with respect to the desirability of an international agreement on copper.

Both of these commodities are traded on a world basis. The prices change frequently and sometimes violently. These price changes are disturbing both to producers and to consumers. They make it difficult to plan for orderly expansion of future capacity to meet growing needs. They have severe impact on the foreign exchange earnings of a number of developing countries which are major exporters of one or the other of these metals. Ultimate consumers, who are for the most part manufacturers of finished goods, find it difficult to accommodate the violent swings in the prices of these raw materials when their own prices are customarily changed with relative infrequency.

For these and many other reasons the desire to work out an orderly international arrangement to stabilize prices is understandable and the intentions of the governments which have participated

in these discussions are laudable. Looked at from the vantage point of the United States, a stable price and adequate supply of tin are significant both for the country's economy and for national security.

In the case of copper, the United States is the world's largest producer and consumer of this metal. The copper industry is a significant employer of labor and it is an essential ingredient in the Gross National Product. Stable copper prices would help to steady the level of economic activity in this country and mitigate some of the violent swings in the business cycle which have characterized recent years.

Because the tin agreement has a long history it is well to begin by an analysis of how it has operated. Each of the five agreements which have been put in place since 1956 provide for a buffer stock operation intended to keep the price of tin above an agreed floor and below an agreed ceiling. Supplementing this buffer stock arrangement, which for the most part has been financed by the producing countries, the agreements have also called for supply-management. This means that in periods when the market is weakening and a surplus of tin inventories develop, the producing countries limit their exports by an agreed percentage of a base quota -- which, in turn, is adjusted to their normal historical level of production.

Discussions looking to an International Tin Agreement began in the late '40s shortly after the end of World War II. The U.S. government was a party to these discussions. It was not until 1955 that an agreement was reached by a scheme which became effective in 1956. Seven major tin producing countries and more than 20 major tin consuming countries ratified the initial agreement. The United

States, however, abstained. While representatives of U.S. government and industry regularly attended meetings of the International Tin Council, it was not until the Fifth Agreement, which became effective in 1976, that the United States became a member. The change in U.S. policy was apparently a reflection of a conviction within the administration at that time that it was desirable to inhibit the formation of producer associations for major export commodities, such as the Organization of Petroleum Exporting Countries. U.S. policy came down hard in favor of inter-governmental agreements involving both producers and consumers and the Tin Agreement obviously qualified under that score. In meetings with industry leaders and later in appearances before the Senate Foreign Relations Committee, whose consent was necessary for ratification of the agreement, the advantages of our membership were cited as two. One, we would be in a better position to engage in dialogue with the Third World since all but one of the producer members are developing countries of the Third World. The second argument advanced for adherence was that U.S. consumers would be assured of tin supplies at reasonable prices.

Because of rampant inflation and other causes the International Tin Council has made a substantial number of adjustments in both the floor and ceiling prices over the years. The first of a series of truly dramatic changes occurred in 1974. Tin prices had been relatively stable in the years 1970 to 1972 at a level of approximately $1.75 a pound. Beginning in early 1973, reflecting a worldwide economic boom, the price of tin rose steadily and exceeded $3 a pound by the end of the year, far in excess of the then existing price ceiling under the agreement of approximately $2.25 a pound.

The frenzy in commodity markets which characterized the first half of 1974 carried tin prices to $4.70 a pound or more than double the ceiling price. Under these conditions of course the buffer stock had been completely sold by the buffer stock management.

This stock amounted to the equivalent of 20,000 long tons of tin which compared with the level of world tin consumption of about 200,000 tons. Thus the stock was equivalent to about 10% of a year's consumption. At that time an additional source of tin available to the market was the U.S. strategic stockpile. Because the quantities of tin in the stockpile were substantially in excess of the then existing stockpile objective, Congress had authorized the disposal of very large quantities of tin. As the price moved up stockpile sales became very substantial. Between July 1, 1973 and June 30, 1974 about 40,000 tons of tin were sold by the stockpile authorities.

Thus, even though the United States was then not a member of the Tin Agreement, it contributed from its strategic stockpile an amount of tin more than double the maximum buffer stock holdings. Despite this large additional supply from non-current production the price moved above the then current ceiling. As a consequence the International Tin Council made drastic changes in its floor and ceiling prices. These are regularly reviewed. The new floor price was in excess of the previous ceiling price -- thus creating a discontinuity. Floor and ceiling prices are normally stated in terms of Malayan currency because Malaysia is the world's leading producer of tin.

As 1975 was a recession year the price of tin for the most part remained within the new ceiling price range but early in 1976 a recovery set in. In May 1976 the International Tin Council dropped

export quotas and revised its floor and ceiling prices. Based on then current exchange rates the new floor price was equal to $2.94 a pound and the new ceiling price to $3.53 a pound.

In July 1977 another change was made. The new floor price was $3.87 a pound and the ceiling price was $4.84 a pound. One year later in July 1978 still another change was made. The new floor price was $4.35 a pound and the new ceiling price was $5.48 a pound. And in July of 1979 still another change was made in this now regular annual update escalation. The new floor price was $5.25 a pound and the new ceiling price was $6.83 a pound. And on March 13, 1980, still another increase was made of 10% above the former levels. In particular, Bolivia, normally characterized as the highest cost producer of tin, keeps pressing for still further price increases.

With few exceptions since 1976 the actual market price has been in excess of the agreed range. The modest buffer stock accumulated in 1975 has long since been liquidated. The buffer stock arrangement exists on paper only.

Some of the discussions looking to a Sixth Tin Agreement, to be effective in 1981, will center around the desire of Bolivia and possibly other producing countries to cut back on the U.S. voting power within the International Tin Council. Bolivia is particularly incensed about the fact that the U.S. delegates have repeatedly opposed the upward adjustments of the floor and ceiling prices for tin. Although the U.S. strategic stockpile has been relatively inactive, both the Ford and Carter administrations have sought authority to sell additional quantities of tin from the stockpile. Finally, at the last session of Congress authority was voted for a sale of up to 35,000 tons but no sales have yet been made. It has been indicated

that the intention is to sell tin at a rate of about 10,000 tons a year. Despite earlier indications that sales might have started in March of this year, it is now indicated that sales will only begin as of July 1. The reasons for this delay have been variously interpreted by the press but there appears to be a general assumption that it is not unrelated to a Bolivian election scheduled to take place in June.

I will submit for the record a tabulation contrasting the prices for the leading metals as of March 31, 1980 with the ceiling prices that prevailed during World War II. This tabulation shows that among these major base metals by far the greatest increase in price has occurred in tin -- despite the fact that of all these metals tin is the only one subject to an international agreement intended to stabilize prices. It is also relevant to point out that the production and consumption of tin have shown the smallest increase of any of these base metals during the entire post-war period. Consumption has undoubtedly been adversely affected by the substantial rise in prices but there is an anomaly about the failure of production to respond to the incentives provided by these sharp price advances.

One possible explanation would of course be a failure to develop new tin deposits to add to the available reserves. However, two other observations appear pertinent. One is that in the case of two of the major producers -- Bolivia and Indonesia -- the tin industries were nationalized and production in these two countries has not reattained the levels achieved under private ownership. By contrast, production in Malaysia and Thailand has made more favorable comparisons with previous levels of output and the industry in both these countries remains in private hands. A further fact is that taxes imposed by the producing governments have risen sharply.

These include taxes on production and exports rather than on profits. So severe are the export taxes that there appears to have developed a well documented substantial export trade in smuggling tin concentrates out of some of the producing countries to avoid tax payments.

An objective appraisal of the tin agreement cannot avoid the conclusion that it has not brought price stability. On the contrary, the markets both in Penang in Malaysia and in London are subject to sharp day-to-day fluctuations. Nor has it improved the U.S. dialogue with the Third World if one is to judge by the statements made by political leaders in the producing countries critical of U.S. policy.

The only way in which U.S. consumers can look forward to obtaining their tin supplies at reasonably stable prices would be if tin production were to be expanded. This should certainly be high on the agenda for discussion by U.S. delegates in the forthcoming meetings regarding the Sixth Agreement. The producing countries should be asked to provide incentives for increased production.

Without the U.S. government selling any tin from the stockpile, it appears that production and consumption are at present in approximate balance. The argument is frequently made that the tin agreement would have worked better if the buffer stock had been larger but if one looks back to the 1973-74 experience, it appears from that that a buffer stock three times the size of the previous 20,000 ton limit did not prevent a dramatic price increase at a time of excited demand. How can a buffer stock now be accumulated to provide a measure of stability?

Clearly even if new price ranges are agreed to by the Council, an active buffer stock buying program will drive the price still higher. The U.S. stockpile, which is perhaps going to provide some

measure of elasticity to the supply situation over the coming years, is after all a finite resource. It has met the supply gap in the past. It cannot continue to do so ad infinitum.

Unless real efforts are made to expand tin production, one must be very skeptical of the effectiveness of a new tin agreement in stabilizing prices.

While the price of copper has by no means risen to the same extent as tin has risen, price movements in this commodity in recent months have been extremely erratic. Compared with the current U.S. producer price of slightly in excess of 90¢ a pound, the average price quoted by a leading publication as recently as mid-February was $1.43. At the end of 1978 the comparable price was 73¢ a pound.

The copper industry is a far larger one than the tin industry. Primary production in the Western World, excluding the centrally planned economies, is in the order of 7,500,000 tons a year. At a conference on copper held in Geneva last year the U.S. delegation suggested discussion of a possible copper agreement involving a buffer stock of 1,000,000 tons to be used to try to modify the sharp price swings, the intention being, of course, to purchase copper in periods of market weakness and to sell it in periods of market strength. The suggestion was qualified as not being a firm proposal but simply a starting point for discussion. Because the U.S. administration has a philosophical aversion to arrangements which involved what is loosely called "supply-management" -- that is controls over production and exports -- the U.S. delegation made it clear that this suggestion was for a pure buffer stock arrangement.

At the end of 1973 the reported refined stock of copper by the American Bureau of Metal Statistics, both within the United States and in other reporting countries of the Free World, amounted to 305,000 tons -- an abnormally low level. At the end of 1977 after four years of consistent production in excess of demand, the same stocks were reported to have been 1,672,000 tons -- an increase of 1,300,000 tons.

Had a copper agreement been in place, clearly it would not have been able to absorb this entire surplus. It is relevant to point out that in fact during the years 1975 through 1977 a number of producers either curtailed production or shut down mines. Had a price-supporting mechanism been in place -- without supply-management measures as indicated by the U.S. government -- production would have been considerably greater and consequently the growth in stocks would also have been greater. If a buffer stock (including sales from the U.S. strategic stockpile) of 60,000 tons of tin failed to arrest a significant increase in tin prices, then one must come to the conclusion that a comparable figure to deal with copper would be 30% of 7,500,000 tons or 2,250,000 tons.

One has no way of knowing of course at what price an international copper agreement would endeavor to support the market. It is not unreasonable to suggest that this price would hardly be less than 75¢ a pound or $1,500 a ton. Thus we are talking of figures well in excess of $3 billion for a stockpile of 2,250,000 tons or even of $1.5 billion for a buffer stock of 1,000,000 tons. The global discussions which have been held under the aegis of UNCTAD for a so-called Common Fund began with an initial recommendation for a fund of $6 billion to cover 18 commodities. According to the

New York Times on May 20, 1979, industrialized and developing countries in Geneva agreed that day on the fundamental principles of a $750,000,000 fund "to stabilize Third World earnings for raw materials." At today's prices that fund would barely cover the cost of the tin buffer stock and would be a fraction of the cost of a copper buffer stock. There are sixteen other commodities to be considered.

Before closing I feel I should point out that international commodity agreements by their very nature become public documents. This has great relevance to commodities traded on commodity exchanges. Astute persons who make their living by trading in commodities will be quick to perceive when the limits of any published commodity agreement have been reached. This seems to have been the case with the tin agreement. Once it was clear that the buffer stock was completely liquidated, the tin agreement became a meaningless paper document.

I can conceive of circumstances under which prices of mineral commodities not traded on commodity exchanges could in fact be stabilized through international agreements, but for those mineral commodities that are traded, the task is far more difficult.

Let me point out, for example, that in the year 1979 alone the volume of trading in copper on the New York Commodity Exchange was equivalent to more than six times the total consumption of copper in the United States. For a variety of reasons a great deal of money has flowed into the commodity exchanges that was formerly invested in securities or banking institutions. The perceptions of those who control that money will in many cases overwhelm the normal ebb and flow of buying and selling between the actual producers and the actual users of the commodity.

It is hoped that these observations will make clear the enormous difficulties involved in trying to control prices of commodity through inter-governmental buffer stock agreements. The objective of stabilization may appear desirable but the likelihood of achieving the objective unfortunately is low.

Thank you for your attention. I will be pleased to respond to any questions.

COMPARATIVE PRICES

Metal	World War II Ceiling Price	Price March 31, 1980(a)	Increase %
Aluminum, lb.	$ 0.15	$ 0.69	460
Copper, lb.	0.11775	0.91	773
Lead, lb.	0.065	0.48	739
Mercury, flask	195.00	405.00	208
Nickel, lb.	0.35	3.50	1000
Steel Scrap, No. 1 - Chicago, ton	20.00	96.00	480
Tin, lb.	0.52	8.60	1654
Zinc lb.	0.0825	0.375	455

(a) Wall Street Journal of April 1, 1980

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Gold and Silver as Stores of Value

An Historical Perspective by
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Former Vice Chairman
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1981 Henry Krumb Lecture of the
American Institute of Mining,
Metallurgical and Petroleum Engineers (AIME)

Simon D. Strauss, former vice chairman and now a consultant to Asarco, is one of the world's leading authorities on metal markets. Born in Lima, Peru, the son of a United States mining engineer, he began his career as a journalist prior to becoming a financial analyst covering the metal and coal industries. During World War II he served as an officer of Metals Reserve Company, a government agency. He joined ASARCO Incorporated in 1946 in the sales department and quickly rose to the executive ranks of the company. His many industry, business and academic credits include membership on the Materials Advisory Committee, Office of Technology Assessment of the U.S. Congress; chairman of the Committee on Minerals Availability of the American Mining Congress; chairman emeritus of the Silver Institute; former president of the Lead Industries Association and the Zinc Institute, and a director of the International Copper Research Association and the American Bureau of Metal Statistics. Mr. Strauss has been a visiting lecturer at Massachusetts Institute of Technology and a visiting professor in mineral economics at Pennsylvania State University, Polytechnic Institute of New York and the University of Arizona.

Gold and Silver as Stores of Value

A funny thing happened on the way to the supermarket in the late nineteen sixties. Silver coins disappeared from circulation—not only in the United States but also in Canada, Switzerland, The Netherlands, Austria, Germany, France and other countries where they had been part of the circulating media used for commercial transactions. Gold coins, although still being minted, had disappeared from the marketplace in most countries during the nineteen thirties.

Thus, though many countries today continue to mint and issue precious metal coins, no longer is money with intrinsic value used in shops, restaurants, hotels, or other marketplaces as a means of payment. A tradition of more than twenty-seven hundred years—the use of silver and gold coins to pay for goods and services—has come to an end, except perhaps for the rare cases of desperate emigres seeking refuge from war or revolution who offer their precious metal hoards in exchange for safe transit.

The Value of Money

Today the world's commerce is carried on with paper money, with token coins minted in base metals, and of course with checks, plastic cards, and other evidences of credit standing. This is not necessarily a choice by the vast majority of the world's population. For many the preferred alternative is still hard money—money based on content of precious metal and not on value attributed to it by a government.

That this is so is clear from the eagerness with which current issues of gold and silver coins are snapped up by the public—to be put away in vaults or other safe havens, as a means of preserving wealth. These coins pay no interest. Yet in the minds of their owners they will retain their value when other measures of wealth are deteriorating. Paper money, they feel, is subject to the ravages of inflation. Gold and silver coins, they believe, will rise in value as the worth of paper money declines.

Since time immemorial gold and silver have been treasured by mankind. Egypt, Greece and Rome are considered to have been the cradles of modern European civilization. But when Europeans traveled to distant lands in other continents—to China, India, Tibet, Mexico, Peru, Colombia or the African West Coast—invariably they found ornaments and artifacts of gold and silver as prized possessions.

A Barbarous Relic

In the Twentieth Century a profound thinker on economics, John Maynard Keynes, declared that gold as money was a barbarous relic. The head of the U.S. Federal Reserve Board, William McChesney Martin, repeated the epithet some twenty years later. U.S. Treasury policy for years was to denigrate and eventually to try to sever the link between gold and money.

In learned academic circles this view is widely held. Money, the savants say, should be linked to the full faith and credit of the issuing governments—not to the uncertain supply of precious metals. But they have not convinced the billions of people, less learned in economics but more steeped in tradition, who view paper money with distrust and who still regard "hard money" in gold and silver as desirable assets.

What accounts for the fascination these metals hold for mankind? Why were they the first almost universal choices for money? Why and how were these metals displaced from their historic role?

An Historical Perspective

To find answers one need not look far. My research has been based primarily on the *Old Testament*, the *Oxford Universal Dictionary*, the *Columbia Encyclopedia*, and the *Encyclopedia Britannica*. Millions have played parts in this engrossing history but to my mind the principal actors include Abraham, Moses, Croesus of Lydia, the Kings of Bohemia and the Emperors of Austria, Sir Isaac Newton, Alexander Hamilton, William Jennings Bryan, the already mentioned John Maynard Keynes, Franklin D. Roosevelt, John F. Kennedy, Richard Nixon, and perhaps Bunker Hunt

Gold and silver share certain attributes. They are rare; they cannot be duplicated or counterfeited (although alchemists have made a valiant try); they appeal to the eye; they are durable.

Three Billion Golden Ounces

Experts agree that most of the gold and silver produced since the dawn of history (and they, along with copper, were the first metals to be produced) is still around. A recent estimate by a distinguished French miner, Pierre Gerin-Jean, places existing stocks throughout the world at over 3 billion ounces of gold and 25 billion ounces of silver. These metals are treasured and closely guarded as bullion bars, as coins, as jewels or as objects of art.

In this century some important industrial uses have been developed. Gold and silver required for these purposes may not always be readily identifiable but those who know do not overlook their inherent value. Recently *The Wall Street Journal* reported that a prominent doctor had listed his library of X-ray films as part of his estate because of the silver content of the films.

And now for history.

The first reference to gold in the Old Testament is at its outset In Chapter Two of Genesis it is stated that a river went out of Eden to the land of Havilah "where there is gold; and the gold of that land is good: there is bdellium and the onyx stone." *The Oxford Dictionary* defines bdellium as any of several trees yielding a gum-resin. But parenthetically the dictionary states that the rabbis explained bdellium as pearls. So it appears that Eden and its environs were rich in gold, pearls, and onyx. All of this before Jehovah, deciding it was not good that man should be alone, removed a rib from Adam, and created the woman later named Eve.

A Thousand Pieces of Silver

Enter Abraham, the Hebrew patriarch. In the course of his travels with his wife, Sarah, and his followers he came to the land of Gerar, of which Abimelech was king. Fearing he might be slain for his wife's sake, Abraham said Sarah was his sister and Abimelech took her into his quarters. But in a dream God told Abimelech he was a dead man because Sarah was another man's wife Abimelech had not yet—to use the Biblical phrase—"come near her." Early next morning Abimelech reproached Abraham, who confessed the truth. In a remarkable act of contrition, Abimelech then gave Abraham sheep, oxen, men-servants and women-servants and a thousand pieces of silver. The weight of the silver pieces is not stated.

In a subsequent episode, Abraham was looking for a burying place for his beloved wife, Sarah. Ephron, the son of Zohar, sold him a field containing the cave of Machpelah for four hundred shekels of silver. As the Bible puts it, Abraham "weighed to Ephron the silver which he had named in the audience of the children of Heth, four hundred shekels of silver, current money with the merchant." That is the first reference to money and a specific amount of silver, since the shekel was a unit of weight

It is believed that originally the shekel weighed 16.3 grams. Subsequently the shekel was reduced to the equivalent of 8 grams. The shekel was not a coin at that time, as the first coins were minted many years later. But it was a specific amount and that is why the Bible states that Abraham "weighed to Ephron the silver." One can readily calculate that 400 shekels at 16.3 grams was equivalent to 208 ounces of silver and that at $15 an ounce the burying place cost the equivalent in today's currency of $3,130

city-states, to its plentiful supply of silver. The Athenian coin was stamped with an owl's head. Perhaps it was from the wide circulation of this famous coin that owls derived their reputation for wisdom. The modern unit of weight—the dram—owes its name to the drachma. Throughout the Mediterranean areas and the Mid-East coins have been named drachma or dirhem or dirhan—all words that derive from this Greek origin.

In Rome the basic coin was the denarius, weighing one-twentieth of a troy ounce. The Romans initially minted both a gold denarius and a silver denarius. The value of the gold coin was established as equal to 25 of the silver coins. This ratio of twenty-five to one reflected a growing abundance of silver not only from Greece but also from Spain and other mining areas exploited by the Romans.

The ratio had been different in more ancient times. The famous king of Babylon, Hammurabi, about the year 1900 B.C. had established the ratio of silver to gold as six to one. This was in recognition of the relative scarcity of silver at the time and the relative abundance of gold. The explanation for the difference has been well put by John Ross in his book *Stones of Destiny* from which I quote.

"Silver in the form of native metal occurs only in small amounts and rather sparsely over the world, and it quickly corrodes to form a black, oxidized coating. By contrast native gold and native copper are rather more plentiful. It was not until the Greeks began to exploit the rich galena deposits of Laurium and recover silver in association with lead that silver became truly plentiful in relation to gold."

Adulterated Roman Coins

When the Roman Empire was over-run by the Goths and other northern tribes, the Romans had already begun to adulterate their coinage by lowering the weight of contained metal. On occasion coins were minted in lead with a gold plating to deceive the public.

During the Dark Ages a period of monetary instability ensued. In time the practice of using actual weights of precious metal in trade was revived. A good example is afforded by the Vikings, the fierce Scandinavian warriors who swept over much of western Europe in the eighth, ninth, and tenth centuries A.D. An article in the September, 1980 issue of *Smithsonian* magazine describes the Viking use of silver:

". . . The British Museum's superb silver [Viking] hoard, discovered in Cuerdale in Lancashire by workmen repairing a river bank in 1840, [was] undisturbed since the day it was hidden in the tenth century. The massive weight of this silver hoard, 88 pounds, is made up of bracelets, brooches, chains and foreign coins, and odds and ends of 'hack silver'. This hoard reveals that, in a culture without its own coinage, transactions were paid for with weighed silver—perhaps two bracelets, a brooch and a jumble of foreign coins, and if the weight was a little short, a lump would be hacked off the arm ring the dealer was wearing to bring it up to scratch."

One of the major tools of the Viking traders was a set of collapsible scales for weighing precious metals. Decorated lead weights were used in operating the scales.

A Chinese Tael

And in a totally separate and then isolated civilization, the Chinese, one finds a similar use of a specific weight of silver as the basic unit for commercial transactions. The Chinese unit was known as the tael or lyang. These names applied both to a coin and to a specific weight—about 1 1/3 troy ounces.

Modern European currencies began to develop in the eleventh century A.D. The best known was the English pound. When the Normans conquered England in 1066 A.D. they brought with them a silver penny minted of an alloy of 92-1/2% silver and 7-1/2% copper and decorated with a small star. The Saxons called the coin a sterling—a corruption of the word "starling". Because 240 of these coins weighed a troy pound, as the need for a more valuable item of currency arose the British came to speak of the pound sterling.

Pounds, Shillings and Pence

Some 400 years later King Henry VII wisely decided that the gap between the penny and the pound was too great. An intermediate unit was required. He designated a new coin to be known as the shilling sterling, equal to 12 pence and in turn one-twentieth of a pound. Just as talent, originally a weight, had become a word to denote quality, so too in time the word "sterling", originally an alloy, acquired its present sense of meaning excellent and known value.

Note the parallel between the English system of pounds, shillings, and pence and the early Roman denarius. The denarius was one-twentieth of a troy ounce. Thus a troy pound, containing twelve troy ounces, was equivalent to 240 denarii while the English pound sterling was equivalent to 240 pence. As an abbreviation the English used the letter "d" for denarius to denote pence. And, of course, South African gold miners have consistently identified the gold content of their ores in pennyweights by the abbreviation "dwt".

To most people, the mark is the standard unit of currency in Germany and other countries. But, like the British pound, it was originally a unit of weight. The mark was defined as equal to eight troy ounces or two-thirds of a troy pound in the elev-

enth and twelfth centuries. Trade in England then was carried on in terms of marks as well as of pounds. Transactions took place in both gold and silver marks.

The Mark of a King

When Richard the Lion Hearted, the famous English king who fought the Saracens in the Holy Land, was returning home from the Crusades in 1193, he was captured by the Emperor of Austria, Henry VI, and held for ransom. The Encyclopedia Britannica states that the ransom was 150,000 marks—but does not specify whether these were gold or silver marks.

My authority for believing the ransom was gold marks is Errol Flynn. In the movie *Robin Hood* Errol Flynn as the hero waylays a troop of soldiers conveying tax returns in gold which had been collected by Richard's brother, Prince John. Robin Hood—that is to say, Errol Flynn—claims that Prince John intends to line his own pockets with this gold treasure but Robin Hood will use it to ransom Richard. History tells us that in fact the ransom was paid (perhaps not quite in full), Richard was released, and shortly thereafter was killed fighting his former ally, Phillip II of France.

A ransom of 150,000 gold marks would have been equivalent to 1,200,000 ounces. Clearly, Henry VI of Austria ranked right up there with Ayatollah Khomeini of Iran when it came to ransoms.

The Almighty Joachimsthaler

What about the origin of the dollar? The most prolific silver mines in Europe in the Middle Ages were at Joachimsthal, a village in what was then the Kingdom of Bohemia. In the early fifteenth century the Kings of Bohemia used this silver to mint a coin which became known as a Joachimsthaler because of its place of origin. It contained eight-tenths of an ounce of silver, or one-tenth of the eight-ounce English silver mark. Joachimsthaler was rather a mouthful for merchants quoting prices on their goods. Thus eventually the name for this beautiful coin was abbreviated to thaler. When Bohemia was absorbed into the Austrian Empire, the Austrians adopted the thaler as their standard coin.

The Austrian Empire was ruled by the Hapsburg family. Charles V of Austria married a Spanish princess and also became Charles I of Spain. With the Hapsburg family in charge of both Empires, it proved convenient indeed that the basic Spanish currency unit was the real—meaning royal—containing one-tenth of an ounce of silver. Eight Spanish reales, equivalent to one Austrian thaler, became known as the Spanish thaler. These are the legendary pieces of eight, made famous in Stevenson's *Treasure Island* by Long John Silver's parrot.

The Spanish had established mints in Mexico and Peru to coin the huge silver output of those colonial possessions. As the treasure ships sailed back to Spain from the New World many of them were raided by pirates and by enterprising American colonists who called themselves privateers.

Thanks to this somewhat unorthodox custom, pieces of eight or Spanish thalers circulated freely in the Colonies. When independence from England was achieved, Alexander Hamilton proposed to Congress that the United States currency be denominated in dollars—an obvious corruption of the word "thaler." The Colonists had called the small Spanish real "a bit." Two reales—equal to the U.S. quarter—was "two bits."

Austrian Maria Theresa thaler (left); Spanish thaler or eight-real piece; United States silver dollar.

A Long-Held Standard

The new dollar was approximately the size of the Austrian and Spanish thalers. Because U.S. mintage was based on an alloy of 90% silver and 10% copper, the precious metal content of the dollar was 0.77 ounces of silver rather than the 0.8 ounces contained in the Austrian thaler and the Spanish eight-real piece. As $1 contained 0.77 ounces, the monetary value of silver on the basis of Hamilton's proposal was $1.29 an ounce—a standard set in Congressional legislation in 1792 and not changed until the mid-1960s.

Although the monetary value of silver was $1.29 an ounce, the country was not on a "silver standard." Silver for coinage was bought in the open market at prevailing prices. Except for rare instances, the price remained well below $1.29 an ounce until 1968. The difference between the market price of silver and its monetary value represented a profit to the Mint. This is called seigniorage—a word of French origin meaning the take realized in minting coins by the lord of the manor—the seigneur.

To revert to the Austrian thaler—the most famous coin of that denomination was the Maria Theresa thaler of 1780, displaying a handsome bust of that buxom Empress. Austria dominated trade in the Middle East and on the east coast of Africa through the famous trading port of Venice, which was then part of the Austrian Empire. The merchants of that flourishing seaport paid for the goods they bought with Maria Theresa thalers.

An International Means of Payment

This coin soon became the universal standard for trade in the Middle East and East Africa. So deep-rooted has its acceptance been, that to this day the Austrian Mint coins Maria Theresa silver thalers, each containing 0.8 ounces of silver. These are not for use in Austria but for circulation in countries where illiterate but shrewd merchants and farmers consider it the most acceptable means of payment. Meanwhile in Austria the thaler has been replaced by the schilling as the standard unit of currency.

Other coins are also known by names that have their origins in units of weight. The French livre and Italian lira are words denoting a weight equivalent to one pound. Many of the Hispanic countries today call their standard monetary unit "the peso"—a word which means weight. In Spain the peseta is a word meaning a small weight.

One cannot escape the fact that money was identified originally as a specific quantity of precious metal of given purity, but as previously stated, in time governments found it convenient to debase their currencies. This was accomplished either by reducing the weight of metal or diminishing its purity.

The Shrinking Pound

For example, the British did not long persist in equating the monetary pound with a pound of sterling alloy. By the nineteenth century the crown—or five-shilling piece—contained about 0.8 ounces of silver. Thus four of these coins, equal to one pound in currency, contained only slightly over three ounces of silver, one-fourth of the original content. After World War I the silver content of the coin was reduced from 92½% to about 50%. This meant only 1½ ounces in a pound sterling. After World War II silver was entirely eliminated from British coinage, except for commemorative issues.

The British example is not unique. The original florin was a gold coin issued in 1252 in Florence with a content of 58 grams—almost two ounces. The Netherlands call their coin, equivalent to two British shillings, a florin. When minted in silver it had a content of about three-tenths of an ounce. Almost every country has had a history of reducing the precious metal content of its coins. The U.S has had a better record than most—the composition of its coins was unaltered from 1792 to 1968.

What is the origin of the ratio of sixteen-to-one for silver to gold, advocated by William Jennings Bryan?

Most people think of Sir Isaac Newton in terms of falling apples and the law of gravity. He has another claim to fame. In 1703 as Master of the Royal Mint in England he set the value of gold at 84½ shillings an ounce. Although the United States did not adopt an official gold standard until the Currency Act of 1900, parity between the British pound and the U.S. dollar for many years was $4.86 to the pound. At that rate of exchange the equivalent to 84½ shillings was $20.67 an ounce. This was 16 times the silver value of $1.29 an ounce based on 0.77 ounces of silver in the silver dollar. Thus between them Isaac Newton and Alexander Hamilton established the ratio that was to become the Democratic battle cry in the Presidential election of 1896.

A Variable Ratio

To recapitulate: Hammurabi set the silver-gold ratio at six to one; the Romans adjusted this to twenty-five to one. Sir Isaac Newton and Alexander Hamilton combined to establish a monetary (but not a market value) of sixteen to one. During the depths of the Depression in 1931 and 1932 the ratio slipped to about eighty to one as silver sold at 25c an ounce while gold held at its monetary value of $20.67 an ounce until 1933. What is the correct ratio? Who can say. In my judgment the prices of these two metals will constantly shift in relation to each other.

Their supply and demand differ greatly. Accidents of discovery of deposits or scientific advances based on the quite differing properties of the two elements are certain to cause changes in people's evaluation of their worth. Change is as normal in this ratio as it is in most elements of the human drama.

Value by Weight

What is significant is that until the Industrial Revolution and until the development of paper currency, gold and silver coins were valued for their weight of contained metal—regardless of the names by which they were called or the identity of the issuing nations. Persons travelling from one country to another did not have to change their monies. The Austrian thaler for many years was good currency throughout the trading world because its silver content was known and accepted. True, the insidious habit of clipping coins to remove a fraction of their precious metal content had caused mints to adopt the practice of milling the edges of the coins. The man in the street—and particularly the merchant—knew the true ring of the noble metals.

In daily life, before paper currencies evolved, silver coins played a far more active role than gold coins. The intrinsic value of silver corresponded more closely to the sums involved in daily commercial transactions by the average citizen. Thus

in many languages silver became synonymous with money. The French call money argent, the Spanish call money plata. Both these words mean silver. And in English-speaking nations, even though silver coins are no longer in circulation, a merchant when he makes change will frequently say to his customer, "Here's your silver"—even though the coins are made of a cupro-nickel alloy. Eating utensils are referred to as silverware, though today many are made of stainless steel or other non-silver materials.

The Interchangeable Crown

In the nineteenth century, most of the leading industrialized nations had coinage of comparable size and silver content. The British crown—the five-shilling piece—had roughly the same size and silver content as the French, Swiss and Belgium five-franc pieces, the Italian five lira, the German five mark, the Dutch $2\frac{1}{2}$ guilder, the Scandinavian five kronors, and the United States silver dollar. In my possession as an example is a five-mark coin issued in 1852 by the Grand Duchy of Baden prior to the unification of Germany. On the face of the coin the denomination is stated as five marks, $3\frac{1}{2}$ gulden, or two thalers—take your pick. When a coin collector speaks of a "crown" coin he means coins of this size and these denominations.

Grand Duchy of Baden coin issued in 1852 denominated as 5 marks, 2 thalers or $3\frac{1}{2}$ gulden.

The origin of this uniformity among nineteenth century European coins was the so-called Napoleonic standard of conformity adopted by the French in 1803. Belgium, Switzerland and Italy subsequently adopted it. In 1862 an agreement known as the Latin Monetary Union was negotiated and more than twenty governments subscribed to the L.M.U. standards. The ratio of silver to gold was set by the L.M.U. at 15.5 to 1, close to the implied ratio of the monetary values in the United States. Gold coins were minted in a fineness of 900 parts gold to 100 parts alloying metal—roughly 21.6 carat gold. The British did not adhere to this—the fineness of their coins was 916.66 parts gold or 22 carats. However, U.S. coinage was based on 900 fineness beginning in 1837.

Paper Money Enters Trade

The growth of world trade, spurred by science and the Industrial Revolution, had made it increasingly difficult to carry on trade exclusively with coins. Paper money was a development of the seventeenth century. Events such as the revolt of the American colonies, the French Revolution, and the American Civil War provided ample evidence that paper money not backed by precious metal could become virtually worthless. At such times the public preferred "hard money" which would retain its value.

The 1914–1918 World War undermined almost all the currencies of Europe. The British struggled to restore the value of the post-War pound but in 1931 they finally went off the gold standard. In 1933 Franklin Roosevelt, faced by the Great Depression, severed the U.S. tie to gold at $20.67 an ounce.

It was then that John Maynard Keynes, plumping for managed currencies, applied the epithet "barbarous relic" to gold. His views gained wide support among those who believe that infinite wisdom can be found in government officials and their economic advisers. These supporters think that by studying the ebb and flow of economic statistics national leaders can make the adjustments necessary to preserve the value of money. In theory perhaps they can, but do they?

Experience has demonstrated that the needed adjustments are unlikely to be popular. If they are not popular they become not politically palatable to officials. Inflation inevitably follows, the printing presses run overtime, and the purchasing power of the currency declines.

U.S. Drops the Gold Standard

When President Roosevelt took the United States off the gold standard in 1933 he was motivated by the fact that if the Treasury had continued to issue gold in exchange for gold certificates at the $20.67 price the country's gold reserves would have soon been exhausted. After a few weeks of fluctuating prices he fixed the new value of gold at $35 an ounce. He made the private ownership of gold illegal and required that citizens turn in to the Treasury any gold coins or gold bars in their possession. Coin collectors were exempted from the order. But U.S. currency was no longer backed by a specified gold content.

Under these new conditions the nation's gold reserve was to be used only for settlement of international balances of payment or for sale to licensed industrial consumers. Domestic gold producers were obligated to sell their output to the government at $35 an ounce. The United States also stood ready to absorb any gold offered to it by foreign producers or by foreign Central Banks at the $35 price.

Many governments other than the United States took similar measures but the private ownership of gold was not proscribed in the Middle and Far East or in such European countries as France and Switzerland.

In 1944 at the Bretton Woods conference the tie between gold and the dollar on the basis of $35 an ounce was made a key element in the new International Monetary Fund. Gold and the U.S. dollar were accorded equal ranking as reserve assets for Central Banks of the member nations.

The Silver Purchase Act

President Roosevelt had also turned his attention to silver. The Great Depression had plunged the price of silver to very low levels. This was causing problems in India and China, two countries where silver had a quasi-monetary status. After failing to negotiate an international agreement on silver, President Roosevelt prevailed on the Congress to pass legislation known as the Silver Purchase Act. Under this Act the U.S. government was empowered to purchase silver in the open market at prevailing prices until such time as the value of its silver holdings, based on the monetary price of $1.29 an ounce, was equal to one-third of the value of its gold holdings, valued at $35 an ounce.

Under the Act, domestic miners of silver were guaranteed a fixed return because they were permitted to deliver silver to the Mint for coinage based on the government retaining 50% of the monetary value as seigniorage. This meant domestic miners realized 64.5 cents an ounce on their silver—a premium over the open market price. Thanks to this two-pronged program for silver, all domestic mine production, much foreign mine production, and substantial amounts of Chinese and Indian coins were acquired.

By the time World War II broke out, the Treasury had acquired about 3 billion ounces. As the Treasury's gold holdings also rose very sharply following adoption of the $35 price, the three to one ratio between gold and silver was never attained. After several years of active buying, Treasury officials gradually lost interest in acquiring silver of foreign origin. When war broke out in 1939 the world market price was about 40 cents an ounce.

Silver and the War Effort

During the war the Treasury's silver holdings proved of great value. Large amounts were lend-leased to Allied governments that found they could better maintain confidence of colonial populations under war-time conditions by circulating coins of intrinsic value containing silver. Substantial quantities of silver were used as a substitute for copper busbars in government-owned defense plants. Additional amounts were sold to industry for war-related purposes including photographic film, bearings for aircraft engines, and desalting kits for use on lifeboats.

After the end of the war Allied governments returned most of the lend-lease silver. The silver used in the government plants was recovered. Nevertheless, government bullion stocks did not reattain the peak levels reached just prior to U.S. involvement in the war, as much of the Treasury holdings was minted as coins.

Industrial demand for silver rose rapidly post-war while new mine production lagged behind. In 1946 the government reduced its seigniorage on domestic mined silver to 35% (i.e. improved the price realized by the miners) and as a political offset agreed to sell silver to consumers at that same price (91 cents an ounce) should they need the metal.

Erosion of Silver Stocks

In the late '50s government stocks of silver began to erode. By late 1961 President Kennedy suspended all sales to consumers at 91¢ an ounce, as he was entitled to do under the wording of the Act. Thus, the price of silver was free to rise—but a prompt rise above $1.29 an ounce would have had serious repercussions by spurring the hoarding or melting of coins. So the government willingly redeemed silver certificates, backed by silver at $1.29 an ounce, to hold the price in check.

In the early '60s the U.S. Mint worked full tilt to mint enough silver coins to meet the demands of the business community. Coins were beginning to disappear from circulation because some observers correctly anticipated their intrinsic value might in time exceed their face value. By 1964 the Mint decided to replace silver with base metals for subsidiary coinage. The last 90% subsidiary silver coins to be minted bore the date 1964—172 years after Congress first established the $1.29 monetary value of silver. Once an adequate supply of non-silver coins was in circulation the government ended its effort to control the price. In 1967 the price rose above $1.29 an ounce and has remained above that benchmark ever since.

Today the government holds a few million ounces of silver for use of the U.S. Mint in commemorative coins or medals. About 140 million ounces is held in the strategic stockpile. This is all that is left of the vast quantities acquired by the government under the 1934 legislation during the Roosevelt era.

Gold Holdings Take a Dip

The gold holdings of the U.S. government remain large but are well below the high-water mark achieved in the immediate

post-war era. Adverse balances of payment in recent years caused a net outflow of gold from U.S. holdings to the Central Banks of our trading partners.

In the immediate post-war era many Central Banks had opted for U.S. dollars rather than gold in settlement of favorable trade balances. Dollars were then preferred to gold by the academics. As time wore on, however, Central Bank holdings of U.S. dollars became very large. By the late '60s several Central Banks began to indicate a preference for gold over dollars, even though the International Monetary Fund rated them as equally valid reserve assets.

At the same time as this was happening students of gold statistics observed that in the aggregate Central Banks were no longer acquiring gold. This meant that world mine production was being entirely absorbed by industrial requirements or by investment demand in those countries permitting gold holdings by private citizens who regarded gold as a desirable store of value.

The Dollar is Devalued

The events of the Vietnam War undoubtedly greatly stimulated such private investment demand for gold. Industrial demand as such is considerably less than the world's gold mine production. Inflationary pressures and adverse trade balances convinced President Nixon in mid-1971 that the dollar should be devalued in relation to gold. His action, taken in August, 1971, was accompanied by a freeze on wages and prices under Congressional authority. In Japan this over-night development became known as the "Nixon Shock."

Time does not permit a detailed description of the events that ensued. Temporary efforts to find a new somewhat higher fixed price for gold proved unsuccessful. An abortive effort was made to establish two-tier prices for gold—one a fluctuating price for private dealings and the other a fixed price for intergovernmental transactions. This system did not prove feasible.

Restrictions on private ownership of gold were eventually removed in the United States, Great Britain and those other countries that had previously prohibited such ownership. The dramatic developments in the energy field, particularly actions by OPEC on oil pricing, enormously affected the gold price. It rose dramatically to levels previously considered unthinkable in terms of U.S. dollars.

The silver price had risen sharply to establish all-time highs in February, 1974. It fell back later and then for several years moved in a range of $4 to $6 an ounce while gold prices fluctuated far more dramatically.

Metals Safeguard Wealth

From 1974 to 1979 inflation continued unabated in all the industrial nations of the world. Persons of even modest means, worried by the loss of purchasing power of their paper money, increasingly looked to precious metals as one way of safeguarding their wealth.

The Iranian hostage crisis and the Soviet invasion of Afghanistan in late 1979 galvanized gold and silver markets into dramatic activity.

Nelson Bunker Hunt and members of his family had for several years been known to take an extremely bullish view of the prospects for silver. Presumably this was based on the continuing gap between new mine supply and industrial demand for silver clearly reflected in all the available statistics. When the silver market rose above $40 an ounce in January and February, 1980, and then fell back in late March to below $12 an ounce, the Hunt involvement in the market was widely considered to be a major factor in these violent movements.

Paper Money Loses Faith

Without trying to minimize Mr. Hunt's influence, one may doubt that he could have pushed the market as far and as fast as it went had it not been for a widespread loss of faith on the part of huge segments of the population in the value of paper money.

To describe a price is always difficult because prices are measured by a denominator which is not itself a constant—namely, a unit of currency. At this point which is the more accurate description—that the prices of gold and silver have risen or that the value of paper money has fallen?

The events of the last few years have made a lot of people question the underlying value of an asset based on the faith and credit of the issuing governments—namely, paper money. That they should, in this situation, have turned to two metals which have traditionally been regarded as wealth since the dawn of history is hardly strange.

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